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**Name:** Matthew Alexander COHN

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**Faculty Certification**

**Signed:** 

on behalf of the Faculty Manager



POBox6  
Monash University  
Victoria 3800, Australia  
Telephone: +61 3 9905 2819  
Facsimile: +61 3 9905 5400

[www.monash.edu.au](http://www.monash.edu.au)  
ABN: 12 377 614 012

# **STRATEGIES FOR ATTENTION CONTROL FOR INTERMEDIATE STANDARD ADOLESCENT STRING STUDENTS**

Matthew Cohn

B.Mus.Per. (Melbourne University)

Dip. Ed. (Monash University)

Supervisor : Dr. Jane Southcott

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## **TABLE OF ABBREVIATIONS**

CSS – Contention Scheduling System.

IPA – Interpretative Phenomenological Analysis

NLP – Neuro Linguistic Programming

PRP – Psychological Refractory Period

SAS – Supervisory Attention System

# **STRATEGIES FOR ATTENTION CONTROL FOR INTERMEDIATE STANDARD ADOLESCENT STRING STUDENTS**

## **ABSTRACT**

This dissertation is a study to investigate strategies for improving attentional use in instrumental practice for intermediate standard adolescent string students between the ages of twelve and seventeen. The study involved an investigation into the literature associated with attention in learning to play stringed instruments (violin, viola, ‘cello and double bass), the psychology of attention in relation to learning and systems of attention training. A set of three training papers called “Training Attention for String Players” was then devised by the researcher and presented to three students who participated in the research. The research consisted of semi-structured interviews and instrumental practice sessions that were conducted before and after a two-week training period involving students reading the training papers and commenting on their thoughts in a reflective journal. The interviews, and practice sessions were videotaped and the journals were collected. The data was then transcribed for analysis. The study utilised qualitative methodology and a multiple case study design. The data was analysed using Interpretative Phenomenological Analysis (IPA).

The study aimed to investigate how intermediate standard adolescent string students think about their ability to pay attention and their other internal processes including mental imagery. It also sought to examine changes that resulted from the students' exposure to the training papers. The contentions of the study are that string students encounter specific problems relating to how they use their minds in their instrumental practice. Students need to be taught how to use their ability to pay attention and their imagination if they are to become more effective at using these learning resources. Average to poor mental use is reflected by mind wandering and mindless practice that are conditions experienced by string students and performers.

The results found these students did indeed experience these conditions and the narrative from the interviews provided rich descriptions of some student experiences. A number of factors were revealed in how students related to the training papers. Foremost was the role of motivation in relation to instrumental practice and mental use. The students seemed to lack familiarity with their mental states and processes. Students also seemed to have poor physiological awareness. The initial outcome of the training seems to be to stimulate metacognitive reflection in students. Conclusions and recommendations for further research are presented in the final chapter of the study.

## **STATEMENT**

This project contains no material which has been accepted for the award of any other degree or diploma in any educational institution and, to the best of this candidate's knowledge or belief, it contains no material previously published or written by another person except where due reference is made in the text of the project.

Signed

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Matthew Cohn



9 December 1999

Dr Jane Southcott  
Education  
Clayton Campus

Mr Matthew Cohn  
Education  
Clayton Campus

**Project 99/482 - Strategies for attention control for intermediate standard adolescent students**

The above submission was considered by the Standing Committee on Ethics in Research Involving Humans at meeting A8/99 on 7 December 1999. The Committee agreed to approve the project as conforming to the NHMRC guidelines.

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*Ann Michael*

Ann Michael  
Human Ethics Officer  
Standing Committee on Ethics in Research Involving Humans



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Finally, I dedicate this work to my Lord and Saviour, Jesus Christ.

## **Chapter 1**

### **The Research Problem**

#### **Introduction**

Intermediate standard adolescent string students<sup>1</sup> do not usually realise that there are many ways to approach learning their instrument and that some are more effective than others. Often, it is assumed that as actions are repeated they should ‘just happen’. However, there is far more to effective learning than just repeating actions. To practice well, students need a thorough awareness of how their mental processes relate to learning and how they can use their mind effectively in learning tasks. This dissertation investigates strategies students can use to improve their attending and use of their mind when learning to play their instrument.

This chapter will examine the problems with attending that are commonly experienced by string players.<sup>1</sup> A survey of relevant literature examining attention in relation to music education and instrumental practice will be presented in Chapter 2. Theoretical models of attention in human information processing will be examined, along with attention in learning motor skills. A fairly new approach to examining issues in psychology has been employed in this study. This involved a qualitative methodology utilising a multiple case study design and a recently developed method for analysing discourse, Interpretative Phenomenological Analysis (IPA). The rationale for employing IPA will be examined in Chapter 3.

The ‘attention based learning strategies’ being proposed and the training papers ‘Training Attention for String Players’ will be discussed in Chapter 4. This training device was presented to three string students and analyses of their responses form the case studies, which will be presented in Chapters 5 to 7. In Chapter 8 salient issues will be addressed and related to the contentions presented in this chapter. Following this, overall conclusions and directions for future research will be discussed.

## **Context**

Researchers and string pedagogues have commented on the importance of how students use their mind in learning to play stringed instruments. Leopold Auer (1921), the famed teacher of many great virtuoso violinists, wrote:

“Yet the most essential factor... is the mental one. By no means enough stress has ever been laid on the importance of mental work, on the activity of the brain which must control that of the fingers.”<sup>2</sup>

As will be examined in Chapter 2, research in music education has noted concentration and attention as important elements of the learning process. In training instrumental musicians, the typical context is one in which students engage in a lesson with their teacher usually once a week in which work is set and the student is sent home with little advice, to ‘practice’ the required skills. Most of the time the students must be their own teacher, noticing or not noticing their own mistakes, and making or not making their own corrections and improvements. To do this, students employ their ability to use their mind and to pay attention to the sensory feedback being received about their playing. Although this feedback is being received, it is by no means certain that it is being observed.

In Attention plays a central role in executive learning as it relates to learning a stringed instrument. As an example, in learning the motor skills involved in string playing, with progress many aspects become automated but others require the constant monitoring of attention for correction or modification. This study refers to attention-based learning strategies, or strategies that aim to improve learning through improving the way students use their ability to pay attention in tasks such as instrumental practice.

Attention is clearly an important aspect of instrumental learning, however there has been a notable lack of instruction in how attention should be paid in learning to play stringed instruments. It is the contention of this study that this should not be the case and that both students and teachers need to be instructed not only in what to learn but also how to learn. Furthermore, it appears that most teachers do not know how to instruct instrumental students in how to attend effectively. The subject of developing attention skills has only received slight coverage in music education as will be discussed in Chapter 2.

## **The Researcher**

A brief description of the researcher will provide an understanding of the background brought to this enquiry. The researcher is a thirty-three year old professional strings teacher of eight years experience in a variety of schools, teaching both groups and individual students in private lesson and ensemble situations. He studied music performance at the Victorian College of the Arts graduating in 1996 with a Bachelor of Music Performance majoring in viola. He undertook a Graduate Diploma of Education

(Secondary) in 1993 at Monash University, Melbourne, Australia. The researcher's background as both a performing musician and music teacher makes his research in this area of psychology particularly pertinent.

The researcher's interest in this subject began during tertiary studies with the realisation that his instrumental practice was being conducted without appropriate or effective mental involvement in the task. As a student, he found himself going through the motions of playing the viola in a semi-satisfactory way without much mental involvement and thinking about other things while playing. The result was a feeling of loss of control, which resulted in insecurity and nervousness in performance. He also observed this in many performances by other tertiary level string students. This began an investigation into what effective mental functioning in learning might look like. This resulted in extensive reading, initially in the popular literature on attention and subsequently on cognitive psychology specialising in attention. Some of this has been completed as a reading subject during the coursework phase of this degree. As a teacher, the researcher noted that many students encounter the same problems that he did. These investigations resulted in the development of the ideas presented in the training papers and in this research.

**Contentions:**

The contentions of this study are that string students encounter specific problems relating to how they use their minds in their instrumental practice. Students are rarely or never taught how to use their minds to do the learning that should occur in practice. The result is a haphazard approach where students are usually not aware of their internal mental resources or how to use them in the process of learning. They use whatever approach they have discovered, whether it is effective or not.

Although there are many mental abilities required by students in instrumental practice, the main executive ones seem to be their ability to pay attention and to use their imagination. It is therefore a worthy educational aim to present better ways for students to use these abilities while practising. The purpose of practice should be to learn to automate actions to the stage where they can be executed securely and reliably in a performance situation. This underlying technique then releases the performer's attention to guide the performance in an artistic way.

Finally, it is a contention of this study that the student should be presented with information on mental use that they can relate to their own internal experience. This then provides a platform for them to begin to reflect on the nature of their mental experiences and to develop a conceptual and experiential awareness of how to use their mind in

instrumental practice. With these contentions in mind, the specific problems that relate to how students use their ability to pay attention in practice will now be examined.

### **Conscious interference**

Conscious interference is a problem that occurs when attention has not been correctly employed in the initial memorisation of a motor actions and memory has been poorly established. Often, the action has been learned through rote repetitions and because of changes in critical elements of the context of the execution of the action there is a failure to access retrieval triggers for actions in performance. Chapter 2 will examine a schema theory of motor actions, which involves the idea of triggers for actions in relation to a theory of automatic processing in the human information system. This failure of trigger activation interrupts the execution of the action, which leads to a conscious attempt to access the information. This fails though, because of the subconscious nature of the encoding, with the result that the performance breaks down. The result is that students practise their music and then discover that they cannot recall it reliably in performance, or they suffer memory lapses, which leads to anxiety, nervousness and stage fright. Conscious interference highlights a problem with how the students attend when memorising as well as with how they attend when recalling.

### **Mind wandering and mindless practice**

After a student finds that they can play the music automatically without applying attention to every step of the action they often do not know what to do with their

conscious attention. What generally happens is that they start attending to something other than their playing. The student's conscious mind may vacate the task and later they cannot recall what they have just done. This creates a dichotomisation where the mind goes in one direction and the body in another <sup>3</sup>. Usually, the student's mind wanders while the physical actions are rehearsed. This raises the issue of what should happen with the student's attention after playing the music becomes automatic. This problem of 'mindless practice' is highlighted by a number of authors <sup>4</sup>.

## **Overload**

Often the student can feel that there is too much that needs to be attended to at once. This creates the bewildering effect of not being able to do anything properly. Such a perception occurs when there are simultaneous deficiencies in several areas of playing. It can be highlighted in lessons when the teacher points out several errors to the student who has not yet automated abilities to the level where the actions can be coordinated. Overload can be addressed by pacing how the student deals with new material.

## **Misconceptions**

Misconceptions about what it means to pay attention are very common. One example is the perception that attention has to do with some kind of physical effort. People instructed to pay attention can sometimes be seen to tense the muscles in their forehead, brow and chin. This only causes the muscles send more sensations to the mind, flooding processing resources. These sensations are not relevant to attention in any case. Another example that the researcher has encountered is that the student has to look at something



to attend to it. Langer (1998) also mentions the idea that to be paying attention means that something has to be fixated.

### **Boredom**

Boredom is often due to reluctance to engage with the task, perceived over-familiarity, lack of knowledge about how to approach the task or a 'creative block'. Reluctance to engage with the task usually relates to mind wandering as outlined above. Sometimes the student thinks that they know all about what to do, so they stop exploring the task from different perspectives. Often these perceptions of familiarity are false. This is the idea of premature closure. Sometimes the student does not have strategies they can use to approach the learning task and sometimes they just lack the creativity or interest to motivate themselves.

### **Distraction**

Distraction occurs when the student fails to connect to their desire to do something in a way that overrides other circumstantial attention cues. It can be internally motivated, as when students find themselves thinking about other apparently more rewarding, concerning or pressing activities and they lose their ability to continue in a task until its completion. At other times it can be externally motivated by sensory input drawing the student's attention to something else. It is also failure to maintain the direction and impetus of the underlying mental set created by the need or desire to perform an activity.

### **Statement of the aims of the study**

This study aims to investigate how intermediate standard adolescent string students think about their ability to pay attention and other internal processes and examine how this changes, if at all, as a result of their exposure to the training presented in the training papers ‘Training Attention for String Players’.

### **Conclusion**

This chapter has presented the context, the research problem and the contentions of the study. The researcher hopes that this study will encourage educators, especially music educators, to educate students to improve the process of their learning through better attending. It is also realised that the learning strategies presented in the training papers can be further refined and developed. The next chapter will examine the paucity of teaching material on training students to attend more effectively in instrumental practice. It will also discuss relevant theoretical models of attention.

## **Chapter 2**

### **Review of the literature**

Although the issue of attention in music education has been identified, a thorough examination has not occurred. Furthermore, there is little if any information for teachers in how to instruct the instrumental student to attend effectively. Progress has been made in academic psychology in understanding the nature of attention and in ways that can help provide a theoretical basis for instructional techniques. This chapter will consider the literature relating to attention in music education, the issue of attention in cognitive psychology and finally, a taxonomy of attention skills relating to attention in learning relevant to string pedagogy will be presented.

### **Material on attention in music education**

The psychology of attention was brought to prominence by the works of the early modern psychologists of the turn of the twentieth century such as James (1890; 1899), Pillsbury (1908) and Titchener (1908). The general recognition of the importance of attention in music education including instrumental learning then began to filter into pedagogical literature. This initially figured in the literature of piano educators, principally in Annie Curwen's *Pianoforte Method* (1900) and *Psychology applied to Music Teaching* (1917). Tobias Matthay took the issue further and focussed on the need for a specific kind of attention in learning to play the piano. His *Introduction to Psychology for Music Teachers* (1939) features a lecture on Attention and Interest. In *Musical Interpretation* (1913), Matthay discusses the application of attention to specific elements of key

resistance and timing. He also refers to the general application of attention to playing instruments including the violin. He explains how attention relates to analysis in his other principal work, most notable for its title: *The Act of Musical Concentration* (1934). Matthay recognises this need for the teacher to educate the student in how to use the mind:

But what the teacher can do, and must do (in these days), is to help the student *directly* to understand *what* there is to be learnt, and make him directly understand the laws controlling his actions, both mental and physical. Therefore, although you cannot teach him you must nevertheless help him to *learn*. (That is, you must help him to learn how to practise.)<sup>1</sup>

Matthay noted the issue of repetitious mechanical practice without mental application, calling it “automatic practice”, and warned the student and teacher against it.<sup>2</sup>

The only other music educator to deal with mental use from this period was another pianist, Lilius Mackinnon. In her books, *Musical Secrets* (1935) and *Music By Heart* (1938), the problem of mind-wandering and the need to avoid “mechanical practice” was highlighted.<sup>3</sup> Mackinnon identified the need for the student to deal with one thing at a time<sup>4</sup> and provided some suggestions of how the mind might be engaged. She also dealt with the issue of “conscious interference” and its avoidance.<sup>5</sup> *Music By Heart* considered what attention is and how it relates to practice in more detail, however only in the context of persuading or forcing attention. Percy Buck in his *Psychology for Musicians* (1944) also referred to attention, but only in vague reference to “kinds of attention”. These works addressed how the teacher could get the student to pay attention, but not by

teaching the student how to attend effectively. The ability of the student to attend was assumed.

### **The issue in string playing**

The issue of ‘attention’ was addressed somewhat summarily in a number of books on violin playing from the same period. Frank Thistleton <sup>6</sup> in *The Art of Violin Playing* (1924) acknowledged the importance of attention but, unfortunately, he equated tension with attention and relaxation with its absence. This is a comedy of misconception. Sydney Robjohns in *Violin Technique* (1930) briefly mentioned the need for attention <sup>7</sup> and in discussing intonation referred to the need for concentrated critical listening. <sup>8</sup> Again, the subject is barely mentioned.

Along with the disappearance of attention from psychological thought with the advent of behaviourism, <sup>9</sup> so there was a disappearance of psychological reference from books dealing with string playing until the early 1970’s. Sheila Nelson noted in *The Violin and Viola* (1972):

“New students rarely know how to practise: they practise their faults. Making a study of how to help the string-player, from beginner to performer, to practise without reinforcing faults, must increase awareness and direction in the student’s own practising.” <sup>10</sup>

Nelson, a noted string pedagogue, rightly pointed out that attention needs to be directed to the whole act of playing at different levels and not just to specific elements, though at

first this is obviously necessary.<sup>11</sup> Later she noted that the student needs to limit the number of things dealt with.<sup>12</sup>

### **Recent literature in instrumental music education**

Literature in instrumental music education has recently revived the issue of attention and concentration in instrumental practice. McPherson and Renwick (2001) point out that expert musicians employ their attention more effectively, but provide few details about how this is achieved. Hallam (1997; 1998; 2001), interviewing twenty-two professional musicians on how they concentrate, found that, by this stage, fourteen had no major problems with concentration though others reported difficulty with it. She found among a group of fifty-five students that there was evidence of concentration on different aspects of the task at different grade levels. Typically they focussed initially on technical elements and only later on the expressive elements of playing. Nielsen (1999) mentions concentration in his study of learning strategies in instrumental music practice. The relevance of attention in instrumental music practice is also explored by Langer (1998) when she discusses the issue of mindless practice. Renwick and McPherson (2002) link attention and native intrinsic interest. O'Neill (1999) examines attention cursorily in relation to Csikszentmihalyi's (1990) flow paradigm and Roland (1997) also talks about task relevant focus and attending. These examples only explore the issue in general, presenting few if any ideas for practical instruction. In preparing this study, key researchers such as Hallam, Langer and McPherson were contacted concerning their research.

There are few studies that trial ways to get students to concentrate more effectively: Madsen and Geringer (1981) tried to increase student attentiveness with a distraction index, but using this proved distracting for students. Kendrick et al. (1982) devised a system of attention training involving pianists identifying negative and task irrelevant thoughts and replacing them with positive self talk but only dealt with attention in thought rather than sensory feedback and perception.

A number of systems of attention training have been developed and applied to various areas. The 'inner game' system which involves attention training was developed by Gallwey (1974) has been applied to music by Green and Gallwey (1986). Another attention system mainly applied to training in sport, has been devised by Nideffer (1976) and Nideffer and Sharpe (1978). These systems draw on eastern physical and mental training traditions such as those connected with yoga and various forms of Buddhism. Outside this tradition, Gopher (1993) has researched attention training in the 'human factors' field applied to different areas such as piloting aircraft. Gopher was also contacted in regard to his research. Gopher's initial research has been developed by Kramer, Larish and Strayer (1995) and Seagull and Gopher (1997) but not applied to training in music. Demonstrably, there is little relevant literature applied to providing the instrumental music student with a means for improving attention in instrumental practice. Apparently, this issue is raised but never satisfactorily addressed in music education. The next section will consider literature that develops a theoretical construct for a model of attention theory.

## **Attention and learning to play stringed instruments**

Learning to play a stringed instrument involves mastering an array of complex mental and physical skills. These include the fine motor skills of manipulating the bow and placing the fingers in order to produce a sound. Controlling this physical action is the student's brain. Attention in playing stringed instruments involves several key skills, identified in the relevant literature, which are employed in devising this study.

Norman and Shallice (1980/1986) provide a model of the relationship between conscious attention and automated processes within the human information processing system. Another useful model of attention, based on parallel understandings, is that of Baars (1988). These models dovetail nicely as will be discussed in the following section.

### **Non-conscious processes**

Conscious attentive processing is serial in nature and comparatively slow. In order for actions to function rapidly outside consciousness an automatic control system called the Contention Scheduling System (CSS) is proposed by Norman and Shallice (1980/1986), McClelland and Rumelhart (1981) and Rumelhart and Norman (1982). This system involves the activation and suppression of unconscious representations of actions called schemas derived from Piaget's 'schemes'.<sup>13</sup> Schema theory has already been applied to vision, language, memory and motor control as Baars (1988) notes.<sup>14</sup> Activation levels and a process of automatic conflict resolution manage the activation or inhibition of



schemas. In relation to this Baars (1988) <sup>15</sup> postulates a global workspace as a kind of information exchange that allows specialised unconscious processors in the nervous system to interact.

The schemas are arranged hierarchically and, when the source schema for an action is activated it triggers the associated sub-schemas in a cascade effect. As a number of similar movements are made the system generalises qualities and relationships and then writes these back to memory. In the CSS, an activation level is regulated by input conditions causing the schemas to be triggered or inhibited. The input conditions, which activate triggers, form a trigger database in memory. The match between input conditions and trigger specifications determines the level of activation a schema receives. Schemas compete by activation levels and when a threshold is reached, a schema is activated, engages the processing resources and initiates the action. If a schema is constantly activated its activation threshold drops, making it more likely that that it will be activated. A schema will also suppress others that do not match the input conditions as well. When schemas are selected they continue in operation until actively switched off, completed or blocked due to a resource deficit.

Difficulty in the CSS can cause a delay. This is a possible cause of the interference that has been observed and labelled the Psychological Refractory Period (PRP) by Welford (1952). Welford found that when two signals requiring different responses were presented in quick succession with the second signal being presented before the response to the first signal was made, the response to the second signal tended to be delayed. He

suggested that this signified a 'bottleneck' in the human information processing system. Later research employing a dual task paradigm by Greenwald and Schulman (1973) suggested that this delay could be reduced or even disappear if highly compatible tasks were employed. Research by Alport, Antonis and Reynolds (1972) seemed to point to the extinction of the interference associated with the PRP, but later it was found that this was just a reduction due to task redundancy by Pashler (1990), Fagot and Pashler (1992) and Carrier and Pashler (1995).<sup>16</sup> If a task is well automated and performed in a situation where there is no added pressure on processing resources, the chance of processing problems is reduced. Norman and Shallice (1980/1986) point out that, as tasks are learned more effectively, the schemas increasingly become more specialised and less processing is required to activate the appropriate schemas.

The process of learning creates a modular subsystem that separates different skills as noted by Shiffrin and Schneider (1977), La Berge (1974) (1980) and Baars (1988).<sup>17</sup> The system can also merge responses as compounds so they are treated as a single response as noted in research by Fagot and Pashler (1992). The merging of different schemas enables complex actions to be performed automatically and rapidly. There is this underlying stream of automatic processing occurring that relates to learning actions where the brain interacts with inputs and creates outputs.

## **Conscious processes**

The CSS can be regulated and supervised by conscious and volitional processes. Norman and Shallice (1980/1986) call this the Supervisory Attention System (SAS). This identifies problems in the CSS and is able to intervene and mediate between competing schemas. Experientially, we become aware that things are not happening properly and our attention is required. The SAS works through the CSS and does not directly select schemas, as this would slow the selection process and cause interference. It can however impose control on the CSS by motivating a trigger response or by modifying activation levels. For example, Müller and Rabbitt (1989) found that reflexive orienting could sometimes be modified by voluntary control.

Baars (1988) <sup>18</sup> points out that the SAS is influenced by subconscious perception information of intentions, contexts and goals. Sometimes schemas relating to these will be activated and indicate a well-learned response is inappropriate. A signal is then sent that draws on the conscious processors of the SAS to intervene. In practical experience we become aware of a need to supervise our actions.

Conscious processes take time and use up processing resources. Fagot and Pashler (1992) suggest that only one response can be made at a time. To learn actions, initially, awareness of the action must be maintained through its duration in order to guide its course. Baars (1997) <sup>19</sup> points out that, as we point our consciousness at something, learning seems to occur ‘magically’. He also notes that a lot of learning happens at the

subconscious or non-conscious level. Baars is referring to our ability to learn, which is automated perhaps from very early in life.

It is interesting to think about how these subconscious learning processes might be made conscious in order to improve them. On one level, our acquisition of knowledge is a subconscious process, but on another, it is reliant on how we use our conscious mind. Baars (1997) <sup>19</sup> provides the example that when children learn language they do not consciously recognise the parts of speech, yet they learn sentence structure by observation and experience. This, however, still assumes learning skills. It may prove better to teach effective learning skills than to leave their development to chance.

Baars (1988) describes how the supervisory attention processors regulate the experience of consciousness. Much of the time the SAS is involved in monitoring our perception of the external environment from sensory information. Our minds seem to operate in two modes, in one we are broadly aware of what is going on around us, in the other we are focussing in on one particular object or thing in one sensory modality.

Another factor in attention is the role of emotions and sensory states like fatigue. In the Norman and Shallice model these work like the SAS on schemas but over a longer period of time. Low levels of arousal may inhibit the activation levels of schemas and high levels of arousal may increase activation levels. The Yerkes-Dodson (1908) law is explained in terms of the model in that as arousal increases so does performance, up to a point. At this point the processing resources become overloaded and decrement sets in. For example, muscles send impulses to the brain that activate feelings of tiredness and

fatigue. Schemas associated with these feelings compete with action schemas and cause an overloading of processing resources. An example of this is stage fright, which occurs when an individual is anxious or unsure of how to recall a response. The anxiety response floods processing resources. This is a situation where direct intervention by the SAS may inhibit action and cause conscious interference. If attention is not directed in the right way then interference results. The automatic recall of an action sequence is broken and performance breaks down.

The line between automatic and deliberate processes is not always clear. Often intentional deliberate acts are preceded by and result from automatic processes. The attention system monitors input and automatically predicts conditions to facilitate response. This prediction comes from an ongoing process of condition and response matching called a mental set. Processing like this is called ‘top down processing’ and involves intention, anticipation and expectation. It is what happens as we recall what to expect or decide what to attend to. As Baars (1988) <sup>20</sup> says, “it is attention where our consciousness determines what it will become conscious of by controlling attention”. McLean and Shulman (1978) found that once a set is established it persists in the processing system. Baars (1988) <sup>21</sup> calls such phenomena ‘contexts’, and associates them with absorption and concentration. <sup>22</sup> Another kind of mental set results from subconscious response to changes in sensory input that triggers a conscious response and this is called ‘bottom-up processing’.

## **Attention and learning to play the violin - processes and skills**

Conscious attention is required in monitoring the acquisition of motor skills. These skills tend to be drawn from previously developed skills, like the ability to move fingers and arms in useful ways. Fitts and Posner (1967) identify three phases in learning motor skills.

- **The cognitive phase**

During the first (cognitive) phase, actions are guided consciously. General models of movement or schemas are modified by feedback from the application of conscious attention to produce different movements such as bowing and placing fingers on the fingerboard to create a sound. This is why a variety of levels of coordination can be observed in beginner string players, because they have achieved different basic models of hand and arm coordination as examined by Bernstein (1967).

- **The associative phase**

During the second or associative stage there is an interaction between the learner's understanding of the skill and the experiential knowledge of how to make the movements required. In order to improve the action, a satisfactory understanding of how to perform the action must be developed. A student's estimation of what is satisfactory also requires refinement. As the skill is automated and refined, intermediate steps in the action are gradually forgotten. As Baars (1988)<sup>23</sup> says, as any task improves with practice, and as it becomes more efficient it also becomes less consciously available. This is also why an

expert player does not necessarily make an expert teacher. Langer and Imber (1979) observed that if an automatic action is disrupted during performance and conscious control is attempted, the performer could find that the action cannot be recalled. This is what happens with conscious interference.<sup>24</sup>

It is interesting to compare this forgetting of steps in the process of an action to the phenomenon of recollection gaps described by Norman (1981) where we forget what we have just been doing. This point is also investigated in research by Reason (1979) and Reason and Mycielska (1982). Similarly, Reason (1979) also discusses experiences where we end up doing things that we did not intend to do. All these examples exhibit failure in otherwise automatic functioning where there is also a failure in the conscious control and monitoring of actions.

- **The autonomous phase**

Finally, the autonomous phase is achieved and the player can perform the actions fluently and automatically. Conscious attention is no longer required to monitor the activation of each part of the action. The issue for the player becomes one of what to do with their conscious attention. There are a variety of elements the string player must monitor even after the basic movements are learned. Foremost is the soundscape or end product that the student is producing. When a student initially learns an action it will be in a rough or crude form and, even though they may be able to perform the movement satisfactorily, it may create the conditions for long-term problems. For example, bodily misuse and tension can eventually make it difficult or impossible to play. This can be addressed by

the application of refinement of sensitivity, accuracy and economy to the conscious observation of actions after automation. Many times musicians advance despite deficits in awareness and even achieve expert levels of performance, but their approach remains less than optimal. So what are these key skills involved in paying attention in learning to play stringed instruments?

### **1. Macro level attention skills - concentration skills.**

In attending to playing, as with anything else, if a state of being ‘on task’ is achieved, the mind is dedicated to what is being done and work will proceed most efficiently. This is the ability to entrain attention in the task. The idea of creating a mental set, outlook or approach that facilitates mental involvement in the task has been neglected. Traditionally the attitude has been that people should force themselves to attend. ‘Voluntary attention’ is usually advocated though its limitations and difficulties are also noted. Forcing interest by an act of will is a road to drudgery, only maintained by discipline, which does not always work. In the training papers a number of strategies of motivation, ‘an indirect approach’, are advocated. Strategies designed to create a mental state conducive to effective attending are identified and presented.



## **2. Management and control skills.**

The instrumental student needs to develop skills at managing and organising each learning task. This involves the following: recognising and assigning priorities to aspects of the task; realizing the most relevant thing to attend to at any particular time; and the ability to order things and hold them in memory. There is also the ability to get a general sense of the task and realize the steps involved in dealing with it. To do this, a student must know strategies to achieve this and how to apply them effectively.

## **3. Meta-attention skills.**

Meta-attention skills include knowledge about the ability to pay attention and how it can be used in learning tasks. It also involves being able to observe, reflect on and monitor the process of attending. Some research has been done on meta-attention in primary students<sup>25</sup> but this subject also seems to be underdeveloped.

## **4. Micro level attention skills.**

This is the ability to manage localisation skills, switching skills, and timing and flexibility skills. Posner (1980) identifies that attention is not the same as looking. Attention can be applied to the periphery of the visual field and Kahneman (1973) noted a similar distinction for the auditory modality. Localisation skills refer to the ability to select elements at different resolutions of perspective and to adopt a position from which to attend. It is the level of breadth, focus or detail of observation.<sup>26</sup> The transfer of the focus of attention is called attention switching. Gopher (1982), Gopher and Kahneman (1971) Kahneman, Ben Ishai and Lotan (1974) North and Gopher (1976) found that there

are individual differences in people's ability to switch attention and this effects performance in attention tasks. Flexibility and balance relate to the ability to manage the movement of attention in the task and to coordinate it with the physical movements. Ability to manage these micro actions can help to create the macro level attentional skills where involvement in exploring detail leads to increased focus.

Daniel Gopher (1993) discusses the development of strategies for directing attention in different tasks. Hirst (1986) considers the development of a taxonomy of attentional skills. This raises the possibility of attention based learning strategies for improvement of attention skills to enhance student learning in instrumental practice.

## **Conclusion**

Demonstrably, there is a paucity of material relating to training attention in music education and instrumental music education. Relevant theoretical constructions of attention are being developed in scientific psychology and can provide a theoretical foundation for the development of instructional techniques in music education. Chapter 3 will consider the methodology employed in this research.

## **Chapter 3**

### **Methodology**

#### **Introduction**

This chapter will consider the rationale for the design of the research. The selection of subjects and the frame of the study will be discussed. The research devices employed will be examined and there will be a discussion of relevant research issues. Following this the method of data collection, analysis and the coding procedure will be described. The use of Interpretative Phenomenological Analysis (IPA) to analyse the data will also be explained.

#### **Research Design**

##### **Rationale**

As stated in Chapter 1, this research employed a multiple case study design and qualitative analysis. The nature of the research problem suggested that the focus should be an examination of students' conceptions and attitudes as related to different aspects of mental use in instrumental practice. It seemed that this would require a means of gaining a broad picture of student attitudes and insight into their conceptions of attention and the level of their awareness of their internal processes. The need to acquire a large amount of detail without imposing categories seemed the main concern. It was decided that it would not be appropriate to consider a large sample and quantitative methods but rather to

consider, in some detail, different issues that arose in selected individuals who grappled with the training papers. Having considered a number of possible research strategies, a qualitative approach seemed to be the most likely to reveal this kind of information. It was reasoned that this would enable the researcher to explore student attitudes and understandings of attention and mental use while minimising the imposition of categories. The decision was therefore made to employ a qualitative multiple case study research design.<sup>1</sup> The researcher was also keen to limit the number of case studies to keep the data accrued manageable, but deep enough to permit a creditable study and, hopefully to contribute to educational knowledge.

### **The frame of the study**

The frame of the study was to use individual case studies of three students of an intermediate standard between beginner and expert and in the adolescent age range, for the purpose of this study between the ages of twelve and seventeen. These students were chosen because they are at a period in their development as musicians where they can relate to the level of thought that the training papers address and when their understanding of practice regimes becomes important. It is also the point in their development where they should be developing into independent learners. The training papers were written with these issues in mind.

### **Method of participant selection**

The researcher chose the participants for the research. He had a current or previous teacher/student relationship with them. The participants were all capable and intelligent students of their instruments. One of the students was a private student of the teacher throughout the research, one student was a former student and another was involved in instrumental music at a school formerly taught at by the researcher and had been taught by the researcher, but not privately. Ethical approval for the study having been gained, the students were selected on the criteria of willingness, availability, their age and their level of achievement. The students all studied orchestral stringed instruments - the violin, viola and 'cello. The students were not selected as special cases, nor is it claimed that they are representative of students within the frame. They do represent particular cases of student response to the training to provide insight into how different students highlight phenomena and issues in mental use in instrumental practice. All were undertaking private instrumental tuition at the time of the training. All identifying information has been altered to maintain confidentiality.

### **Research format**

The study was conducted by videotaping interviews of the students before the training and then afterwards. This format should not be confused with a Pre-Test/Post Test /Control group study that would be characteristic of a quantitative study. This current research format was chosen to provide background information about the students before they undertook the training, data about their experiences during the training (collected in

a journal) and a post-training interview to gain their assessment of their experience soon after the training. This was done to develop a rich picture of their thought and its context in relation to their instrumental music practice both before and after undertaking the training. The first interview was completed and a pre-training practice session videotaped. The training papers were then distributed with instructions on how to proceed. The students were given two weeks to go through the training papers. Then a post-training interview was conducted and a post-training practice session recorded. It was hoped that the videotaped practice sessions might provide a potential pool of data, useful for triangulation.

## **Research devices**

### **Consent forms and ethics approval**

Ethical approval for the study was gained from the Standing Committee on Ethics in Research Involving Humans at Monash University. The letter of approval is appended in the introductory pages.

### **Research questionnaires**

Sets of questions were devised for the pre-training and post-training interviews. Both questionnaires were designed to provide a broad overview of the participants' practice situations and insight into their perception of their mental approach to learning. The post-training questionnaire asked the students what they thought of the study and how they felt

it might have affected their understanding, attitudes and approach to instrumental practice. The questions were designed as open-ended to elicit a broad range of responses about their practice context, attitudes and understanding of attention and mental imagery. Questions were ordered so that the context was dealt with before the more important issues were discussed. The research questionnaires for both pre-training and post-training can be found in Appendix B. The directive nature and function of the questions and their relation to bias in the study has been carefully considered.<sup>2</sup>

### **The training papers**

The training papers were designed with the participant's age and abilities in mind. Chapter 4 will deal in detail with the construction of the training papers, which comprise Appendix C.

### **Reflective journals**

Subjects were instructed to record their reflections as they went through the training papers and to answer the questions as they proceeded. The journals provided data on the reaction to the training papers and the process of reflection whilst reading and trying the exercises.<sup>3</sup>

## **Research issues**

The need to maintain quality in the research was of concern. Traditional criteria applied to quality in quantitative research are unsatisfactory for research in qualitative studies.<sup>4</sup>

As the researcher engaged with the data he initially became aware of the need to select a method of analysis appropriate to the data and the concerns of the study. Proceeding from this, information on how to conduct qualitative analysis of data in psychology was sought and IPA was selected as noted earlier in this chapter. Key articles on IPA were obtained and the concerns raised by a number of authors concerning quality in qualitative research were obtained. Smith's various articles on IPA<sup>5</sup> provide a framework for maintaining quality during analysis. Willig (2001) also discusses quality in qualitative research and cites other articles dealing with the issue of validity and reliability in qualitative research.

<sup>6</sup> The following section will examine these issues.

## **Pertinent Factors**

Validity is a thorny issue for qualitative research. The validity of a study concerns its relationship to objective realities and whether the study measures what it claims to. In a study like this, objective realities may only be accessed obliquely through participant's language, which it is recognised is coloured by such things as their ability to describe their experiences. Even in this case the description is an extremely poor means of communication. Discriminative examination applied to rich description can however help the researcher gain some insight into participant experiences and, when employed with a



range of checks and balances, move towards making valid interpretations about those experiences.

A number of techniques have been employed to strengthen the validity of the study including grounding or re-checking findings against the original data. This is intended to strengthen the fit between the data and its interpretation. The measure of the study against objective realities can also be strengthened by means of such techniques as triangulation where demonstration of described realities is sought. In this study this has been provided by video recording student practice. Another means of strengthening validity is by disconfirmation of findings, which the researcher has attempted. Other checks include re-checking with participants and discussion with the research supervisor, particularly as she was the interviewer. Finally the researcher has sought to maintain a conservative and critical outlook on the data and his findings.

To provide reliability, the researcher has documented the process of data collection and analysis employed. The researcher has sought to distinguish between material from the training papers and interview questions and seek information in the data that represented the participants' views and understandings. The research, being idiographic in nature, is not concerned to establish representativeness in relation to a broader population but rather to establish the presence of phenomena and examine their nature in particular cases.

### **Other issues of concern**

Certain issues must be assumed such as the honesty of student responses. Cues from the context of the responses can help provide some basis for confidence. Having said this, the researcher was also wary of the potential for a ‘compliance factor’ with the students. Also recognised as a potential issue specifically with Student A was the interval between the initial interview and the training and post-training interviews in terms of maturation. In the light of the way Student A’s case proceeded, this seems not to have been notable. The age differences of the subjects and their different maturational levels may have been a factor. Students of the age group pertinent to this study go through marked changes in their cognitive abilities and maturity. The development of their ability for abstract thought is important, as is their awareness of their mental processes.

### **Data collection**

#### **Circumstances of conducting the study**

The case studies presented are the outcome of analysing the data collected from the videotaped interviews and practice sessions of the three subjects. The interviews were made before and after the training, which involved the students reading, reflecting and keeping a reflective journal. The research was completed over an unintentionally long time frame and, as previously stated, this may have added another variable of a period of extended maturation for one subject.

## **The Interviews**

Semi-structured videotaped interviews were conducted before and after the training. The interviews were undertaken at the mutual convenience of the researchers and students in either the researcher or student's homes. The research supervisor interviewed the students. The researcher was present for most interviews, often operating the camera.

## **The taped practice sessions**

Before and after the training a videotape was made of the students practicing for between ten and thirty minutes. The students were encouraged to practise as they usually would although the presence of the camera did affect the students in differing degrees. The students seemed to settle as the sessions progressed. Despite this, it seems their practice can be taken as being representative of usual practice.

## **The reflective journals**

The students were instructed to keep a journal of their thoughts in response to the training. The journals were hand written in exercise books though Student B composed and submitted his journal electronically.

## **Constraints**

The pre-training interview for Student A was conducted two years prior to her participation in the training and the post-training interviews. She had also only read the final section of the training papers in a summary fashion before her post-training interview. Student B had only read the training papers through cursorily when his videotaped post interview occurred. It did not, therefore, represent participation in the training. To address this, after his journal was received the researcher conducted a phone interview. Student C's initial interview was supplemented with an email response (prior to the training) that addressed some questions that had been omitted. She also admitted that time limitations kept her from reading the third section of the training papers thoroughly. The reader should keep these data collection restraints in mind and the researcher has considered their effects.

## **The Analysis Method**

Smith's (1996) approach to qualitative analysis, Interpretative Phenomenological Analysis (IPA) is employed in this study. Although IPA is more regularly applied to health psychology, Pitts, Davidson and McPherson, (2000) have provided a precedent for the use of IPA in instrumental music education research. The data was interpreted using IPA as this seemed to be the most relevant method given its commitment to making the link between discourse and cognitions. Further this appeared particularly pertinent in a study bridging the boundary between the disciplines of education and psychology.

Smith (1996) asserts that the aim of IPA is to explore the participant's view of the world and to adopt, as far as is possible, an "insider's perspective"<sup>7</sup> of the phenomenon under consideration. Smith describes IPA as concerned with cognitions or understanding what the participant thinks or believes about the topic. It is also concerned with the importance of context and language in helping shape participants' responses. Smith identifies the gap between the personal account and underlying cognitions and the need to bridge this gap as the challenge facing the researcher employing IPA. This deals with the relationship between the verbal account and the underlying cognition or phenomena and how language relates to experience. It seems that this raises the promise of making the internal relationships of the student's understanding explicit. The researcher has kept in mind the need to distinguish between what relates to the responses of the students and his own interpretations. This allows readers of the study to evaluate the researcher's conclusions by reflecting on the data presented in the excerpts presented in the case studies and the response summaries presented in Appendix D.

IPA involves collecting data, usually through semi-structured interviews. The verbal data collected is then analysed for themes. These themes are identified from the data, coded and organised hierarchically and compared to reveal possible relationships. This culminates in a description of the salient themes illustrated from the data and an exploration of the relationships between them.

## **Analysis**

The video footage of the interviews and practice sessions was converted to computer files, which became the foundation for the case records of each student.<sup>8</sup> This gave the researcher the advantage of being immediately able to access any point in the video and to record the exact time of events

### **Coding procedure**

#### **Compilation of case records**

The researcher first compiled a separate case record for each student.<sup>9</sup> This comprised a background statement and a descriptive summary of the salient responses of each section of the interviews. The researcher preserved, as much as possible, the students' language and sought to maintain the character of responses while fitting them in such a way as to allow important themes to become more apparent.

#### **Summary coding**

An initial coding was conducted after the case records were compiled to initially and provisionally identify possible themes. This coding was summary in nature but provided material for a first round of reflection on the data. It involved noting possible themes by key words or phrases in the margin of the case records.

## **Summary of the data**

The case records were further refined to create comprehensive summaries. Care was taken in these summaries to represent the responses of the participants and these were checked against the original data. Omissions were made on the basis of repetitions or data that proved not to illuminate the context of the case.

## **Comprehensive coding**

A second more comprehensive coding was then conducted on the summary of each case where a minimum unit of data was identified, extracted and pasted into an electronic spreadsheet. Appropriate descriptive coding labels were then applied to the data. Typically, the unit of data was a sentence or group of sentences. A table of themes was then extracted and grouped following the procedure of IPA. Use of the spreadsheet enabled further connections between data across categories and more broadly across cases to be identified. Indicative statements were identified and the themes they raised were explored where more evidence was present. The grouping of data and coding in this way provided a further level of reflection and a more comprehensive look at themes. This permitted a deeper level of abstraction of thought where possible connections might be established. Rough diagrams of the relationships between categories were devised and discussed by the researchers. Finally this was taken back to the original data and checked for consistency. Examples from the original data were then extracted for the case studies.

### **Case study construction**

In presenting data in IPA it is usual to present the researcher's analysis interspersed with excerpts from the data to support the presented contentions. The case studies, which follow this pattern, can be found in Chapters 5-7. In addition to this, in order to help illuminate the context of each case, summaries of the student's responses have been provided for the reader's reference and these can be found in Appendix D.

### **Conclusion**

The nature of the research having been addressed in this chapter, the following chapter will present the rationale and discussion of the training papers.



## **Chapter 4**

### **The Training Papers**

In this chapter the training device that was employed will be examined. This training device will be referred to as the ‘training papers’ and can be found in Appendix C. The training papers are titled ‘Training Attention for String Players’ and comprise a set of three papers dealing with the three aspects of the training. Explanation will be made as to why this format was selected. Sources used in the construction of the training papers will be acknowledged and an explanation of the purpose of the exercises offered.

#### **Purpose of the training papers**

Several purposes underlay the creation of the training papers. The first was the desire to compile a training method that dealt with the mental aspects of practicing to address the perceived deficiency in material dealing with the acquisition of specific mental skills in string education. The second was to provide a training device, based on the literature on attention and attention training that could be used to clarify further issues of training and presentation of relevant mental skills. This was presented in a format accessible to string students at the stage of development identified in this study.

### **The format of the training papers**

Three consecutive sets of papers were adopted for ease of access. Students could reflect on the material at their own pace and return to different sections as desired. At this stage of development, students are familiar with instruction presented in a written format embellished with illustrations and diagrams. The language used was also modified to be accessible to the students. The students' responses to the training will be discussed in Chapter 8.

### **Attention based learning strategies**

To develop an understanding of attention, the researcher investigated the psychology of attention, training attention and the definition of attention. This provided a good theoretical foundation in schema theory as previously discussed, but little practical advice for improving attention was located. What was located was only slightly relevant to training string students. A variety of sources for possible methods were searched.

### **Overall framework**

The training papers attempt to engage students and reframe their perspective on learning tasks, firstly by teaching students about their ability to pay attention and attempting to broaden their awareness of this on both a conceptual and experiential level. Secondly, students are advised on how to employ their attention more effectively in instrumental practice. In this section, students are also taught how to observe and correct their playing. Thirdly, the training extends these sections by giving students information about how to

use their ability to pay attention and their imagination in learning on a cognitive and reflective level.

### **Specific devices**

In addition, a number of specific devices are employed. One such device is the use of scripts or procedures for conceptually structuring attentional functioning in learning tasks. These are employed to help students to become more aware of what they are attending to and in what progression. These exercises should also help students think about the qualities and relevance of objects they select to attend to. Another device employed is the application of principles like sensitivity, accuracy and economy to the different elements of the task. Students are encouraged to identify different elements and develop an inventory of different things that attention can be applied to. The students are also encouraged to consider what they should be attending to for relevance.

### **Effective attending**

These strategies provide a good foundation to begin to manage attention abilities in learning tasks. It is recognised that students will attend effectively when interest and enjoyment exist and attention is dynamic and involves examining an object rather than holding it in a rigid way. Langer (1997) calls this 'soft vigilance'.<sup>1</sup>

## **The creation of the training papers**

The training papers were developed following an investigation of the psychology of attention and how this mostly abstract knowledge might be transferred into practical information relevant to adolescent string students. Devices were borrowed from various sources in compiling the training papers.

### **Section 1. Our ability to pay attention**

The first section of the training papers was designed to teach the student to understand their ability to pay attention before they start to improve it. Thus the student was led to a growing awareness of their ability to pay attention as a phenomenon on an experiential and cognitive level. The training papers were intended as a tool that would relate to the students' subjective experience of their attending, to help students connect what was being described and their personal experience.

The first section of the training papers begins with a brief introduction to the qualities of attentive experience. First, a definition of attention is given, related to the idea of being aware and the students' experience of their environment. There is then a further description of the qualities of awareness. Students are encouraged to recognise differences in the information they perceive. They are presented with the idea of an internal and external attention environment in the context of a total attention environment. This is intended to get them to focus on their subjective reality of their

experience of paying attention. Factors involved in how attention functions are then examined, including the role of emotion and arousal. The idea of ‘attention sets’ is then introduced.

The section on ‘attention sets’ uses ambiguous figures to illustrate and introduce the idea of switching attention. The ‘Rat-Man’ illustration, derived from Bugelski and Alampay (1961), was used to show the ideas of context as triggering expectation sets which causes things to be perceived in certain ways. The ambiguous figure of the ‘Heads and Goblet’, derived from Vernon (1962) was used to demonstrate the ‘stand out’ effect when each of the different aspects of the object is attended to. The ‘Playing in the Band’ figure is a common device used in books on the psychology of perception. The next conceptual tool, thinking about the objects being attended to as ‘attention targets’, is presented to highlight the distinction between the object and the way it is attended to. The idea of seeing figures in different ways is then reinforced through the more complex picture of the ‘Old Woman or Young Lady’ derived from Edwin G. Boring and taken from Hunt (1982).<sup>2</sup> The ‘duck or rabbit’ illustration is from a number of such pictures common in books on visual perception. The section of reflections and exercises that follows provided an initial exposure to the idea of scripts. This was to get the students to reflect on their experience of being aware and how their experience related to the information previously presented. The awareness exercises in ‘realizing things about your ability to pay attention’ were developed from the awareness scripts presented in Stevens (1971).<sup>3</sup>

## **Section 2. Using your ability to pay attention in your practice**

The second section of the training device focused on skills relating to students' instrumental practice and their approach to it. The first part dealt with creating interest and involvement and how the student could move to a state that helps rather than hinders concentration. It advocated that students indirectly learn to guide themselves into a state that is conducive to attending rather than forcing themselves to concentrate. The idea of associating interest is certainly not new, being advocated by James (1899).<sup>4</sup> The ideas of installing states and the interest scale and projecting interest come from Neuro-linguistic Programming (NLP) invented by Bandler and Grinder (1979).<sup>5</sup> NLP provides a variety of techniques that may prove valuable contributions to the future of attention training.

The section on detachment and involvement developed from the researcher's own thought, reflection and study of attention. The training then deals with the thinking strategies that the students can use to structure and guide the way they involve themselves in the task. The application of the principles of sensitivity, accuracy and economy to the different elements of playing is central to the method of attention training advocated in this study. It is also the original contribution of the researcher to the field having been developed specifically for the training papers. The story of Mozart, used to illustrate the principle of sensitivity, is quoted from the translation of Schachtner's letters reproduced in Zoff (1951).<sup>6</sup> The principles presented in the training papers are not the only ones possible and the researcher has added the principle of artistry to his list since the training papers were written. The application of ideas like 'the zone' in the principle of accuracy

are examples of structures and applications the researcher hopes to develop further what he regards as a mental technology.

The section on the selection of elements was developed by the researcher with the cooperation and input of some of his students. Also extremely useful in thinking about attention in practice is the idea of localisation which has been refined and made explicit by the researcher but which has also appeared in many forms in other works. The next part of this section of the training papers presents scripts. The idea of scripts has been developed and adapted from Stevens (1971) and Green and Gallwey (1986).<sup>7</sup> By developing this approach it allows the students to begin to think about the structure of how they attend and explore their practice in a structured and open-ended way. At the completion of this section the story “A fishy tale: Louis Agassiz and the art of observation”, adapted from Cooper (1945),<sup>8</sup> was included to encourage the students to discover new aspects of their playing in practice.

### **Section 3. Developing your Imagination Skills**

Section three of the training papers dealt with the application of attention skills to the development of imagination skills and training these skills in instrumental music practice. Many of the techniques described in this section are ideas that the researcher has used in his own instrumental practice and development of his imagination skills. The researcher worked for a long time to develop his aural and visual imagination as tools he could use to enhance his practice and playing. The section on ‘Physical cues to experiencing your imagery’ is also derived from NLP. Other imagination exercises presented are derived

from exercises in De Mille (1967). The ideas of mental models and mental workshops are applied specifically to training stringed instruments in this study and were developed by the researcher. The ideas on perspective are adapted from De Mille (1967) and from cinematography. The combination of perspective awareness, mental models, scripts and the fingerboard grids provide the student with powerful tools for thought about the different aspects of their practice. Much reference is made to internalising the various elements of playing so the student can simulate the experience of playing more and more accurately in their imagination and thereby develop mental practice skills. Scripts are also applied to this mental practice at the conclusion of the section.

## **Conclusion**

This chapter has examined the sources for the attention-based learning strategies presented in the training papers and the rationale that underlies the training papers. The following three chapters will present the three case studies. As previously stated, these will present the researcher's analysis interspersed with excerpts from the data to support the presented contentions.



## **Chapter 5**

### **Case Study – Student A.**

In this and the subsequent cases, following the standard method of presenting data in IPA, a discussion will be made of salient themes interspersed with examples from the data. Further contextual understanding of each case can be gained from the summaries of the data presented in Appendix D. The summaries have been provided to give the reader an overview of the context and verbal portrait of student responses. In these an attempt has been made to preserve the character of the language used by the students. The relationship between the summary and the data can be seen by comparing excerpts presented in the case studies to the summaries in Appendix D.

This first case study was unusual in that the initial interview was conducted two years prior to the training. The subject, a female viola student, was fifteen years old for the initial interview. She is the researcher's student and, at the time of the training, had been learning her instrument for seven years. The subject received a high result in her 6<sup>th</sup> Grade viola exam (A.M.E.B.) She has studied with one other teacher and attends a private co-educational school.

## Engagement and avoidance

The first main theme for this student was the way she relates to a pattern of avoidance and engagement in her playing. This expresses itself in terms of how she attends to her playing to gain enjoyment from it, which is of high value to her, and on the other side in her avoidance of difficulty and frustrations. This was particularly highlighted by the following observation made in the post-training interview. Before this excerpt she says that she practices to improve and for “personal enjoyment”. The interviewer then asks the question:

**Interviewer:** Do you think the training will help you enjoy your practice more?

**Student A :**Um... prob... well... not... no, because, with the training I find that it makes you think a lot more about everything that you are doing. And, when you are paying so much attention to everything you have a lot less time to actually enjoy the music that you are producing, so, I mean, there will be...I will definitely keep doing ..like ... the stuff, and learning and stuff... but there will be times when I want to play just because I can – just for the hell of it... just to make it sound good – not for the sake of practice – so...

It appears that this student perceived a tension between how she usually attends and the way she perceived the training papers were instructing her to. There is also an underlying relationship between how she attends and her derivation of enjoyment and value from her playing. It seems practice means playing the music through and making a good sound. When she feels this, she engages with her playing. However, examining what she is doing takes on a ‘work’ role in her mind and this is less enjoyable as is her playing if it does not sound good. If her attempts to correct it are unsuccessful she becomes frustrated

and defers or avoids the task by moving to a section that she can play. This seems a somewhat entrenched position for her. She will attempt to avoid negative states like frustration when these occur as a result of tackling a problem or difficulty, as the following excerpt from the pre-training interview illustrates.

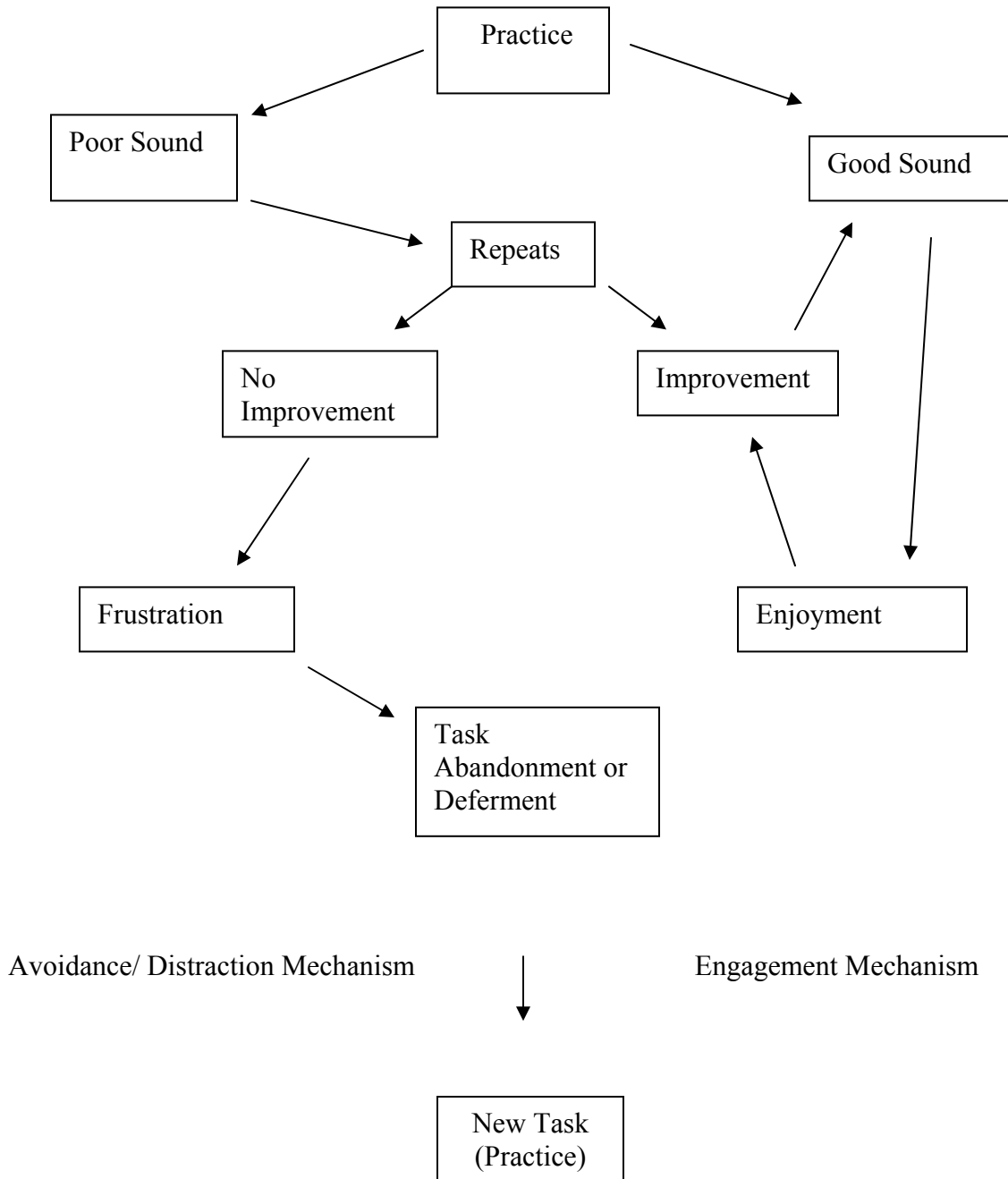
**Interviewer :** When you have got problems playing the music, what do you do?

**Student A :** Um, I'll do as much as I can, if I really really can't get it, I'll go on to something else and maybe come back to it later, and, then ask my teacher for help.

**Interviewer:** Do you think leaving it and coming back to it later helps? **Student A:** Yes, because if you can't play something, you usually get really frustrated with it – and that doesn't help at all, so you just, I just go and do something else, and then I will come back to it later and see if I can do it any better.

In this particular case it seemed helpful to present a model of this internal mechanism that links motivational factors to how she relates to practice. This can be seen below:

**Student A – Process flow diagram- approximation of a common internal model.**



## **Awareness of deficiencies and anomalies.**

Student A expressed a number of themes indicating she had an awareness of deficiencies and anomalies in the way she paid attention in her practice. Some of these themes will now be examined:

### **Mind wandering and distraction**

She raised mind wandering in her interviews as the issue most related to how she pays attention in her practice. She thinks she is good at paying attention on the one hand especially when she is involved in activities she is enjoying or engaged in, but on the other she is aware that she is sometimes easily distracted. She notes in her journal:

**Student A** This could be useful, I'm sometimes easily distracted, so the whole thing about paying attention applies to me rather well.

She observes this distraction, which is either a result of external distractions, avoidance of the task due to apathy, other priorities, or a desire to avoid frustration. As the following excerpt shows, this is not limited to her viola practice.

I will be doing one piece of homework and then I will remember 'oh my god, I have got work from another subject', I will stop there, I could be half way through a question, half way through a sentence. I will move on to the next subject, remember I have something else I have to do, go off, do that, come back, start again. I have got homework from a third subject, go onto the third subject and then I remember I still hadn't finished the work from the first, and it's like a vicious cycle of... **Interviewer:** Yes... **Student A:** And then I will... pick up my books, start reading and then *realise* that I am meant to be doing homework and go back to

my homework... so...(laughing)... You see, for me, its just... I think I tend to try and ignore problems and hope that they go away, Like being behind, in schoolwork, And I realise that they won't go away, And I start studying like mad until I am up to date. Then I ignore it again and try to catch up on everything else...

She also notes that if she is not paying attention and her mind wanders she can experience gaps where she cannot recall what she has just been doing, which means she feels she has to repeat the work.

**Interviewer :** Um, how important do you think it is to pay attention when you are practicing? **Student A:** I think it is actually very, um, it is... It is important, because, there are times I notice that I play a piece, and, I don't know what happens, but, I don't remember having played... a certain section of it. And I think to myself, what have I... you know...did I?... how did I play.. did I play it right? And then I end up having to go over it all over again, and that wastes time that could be used more valuably, more appropriately, rather than having to go over the same stuff again because you can't remember what you actually were doing. So...

Her perceived problem with mind wandering means that she feels she cannot work as effectively as if she could if she responded otherwise. To a certain degree she seems accepting although she realises it is probably unhelpful and an area of her playing she could improve.

### **Automatic pilot**

She indicated that she does experience mindless practice occasionally when she experiences a kind of mental vacancy. She attempts to describe this experience in the following excerpt taken from the post-training interview:

**Interviewer:** So you sort of go on to automatic pilot. **Student A:** Yeah,... I do that... I tend to do that a fair bit...so **Interviewer:** So, is your mind on something else at the time? or... has it just gone sort of vague? **Student A :** It's just gone vague... there are times when it goes to something else, ... that tends to happen a bit too... but, times like that, it just goes vague and I don't even remember thinking about anything or doing anything. I just... I know I played, I must have, because I have done about half the piece, but there'll be (breaks into laughter) **Interviewer:** I am interested in this, so, can you hear yourself playing or... I mean is it like a, sort of, you're removed and your standing back, or? **Student A:** I can hear myself playing while I play, but as soon as I stop, I don't remember having played it. It's very, it's weird, it's hard to describe... because, I know I have played it, I have been playing the entire time, but I don't remember .. I don't remember ... like ... moving, I don't remember the sou, the way it sounded, I don't remember what I did, but I know that I played it, and I ... you know... have a very vague sort of, general idea of what I was doing, but I don't remember doing it properly, so...

Despite what seems to be conveyed here, most of the time Student A demonstrates that she can stick at tasks, and although she might experience momentary distraction, she comments in her journal in regard to her instrumental practice that:

**Student A** I occasionally notice that my mind tends to wander, and I start to daydream. This is also nothing unusual for me, and I am able to notice quickly and not let it get in the way of my playing.

### **Understanding of the importance of attention**

She thought about her ability to pay attention in terms of being able to notice flaws in her playing to be able to correct them, so she has an understanding of the role and importance

of attention in learning. She expresses this in the following excerpt from the pre-training interview:

**Interviewer:** How important do you think it is that you pay attention to what you are practicing? **Student A :** Very important... if you just go through it and not pay any attention, then you will just think 'oh, that sounded good enough' and leave it, so, you have got to pay more attention, or you are not really going to improve a lot.

This demonstrates understanding of the relationship between attention and her ability to make improvements and corrections. She revealed a number of facets about her ability to pay attention. She felt that it was something she had learned to do on her own, defining it as being to focus on something without distraction, and said that when she realises she is not attending as well as she could, she tries to attend more carefully.

### **Her awareness of her ability to pay attention**

Concerning the effect of the training, she says attending to the issue of how she pays attention highlighted her mind wandering. In this excerpt from the post-training interview she feels she became more aware of this issue:

**Interviewer:** What kind of things did you actually learn from it?

**Student A:** Um, I learnt more about the way in which I pay attention, because I paid attention to the way I pay attention and how my mind tends to wander every once and a while... and yeah, so I learnt more about myself in that ... and I am learning sort of, how to cope with that now.



This indicates that she considers herself more aware of how she pays attention when she plays. This meta-attentive awareness is probably the most salient outcome of her initial exposure to the training. Other changes reported included that she had a better idea about what it meant to pay attention and how to approach practice. She has an increased awareness of different aspects of her playing and how she uses her ability to pay attention in her practice.

### **Relationship to the existing literature**

Themes such as interest, avoidance and motivation are currently salient areas of instrumental music learning research. The relationship between pre-existing patterns of intrinsic motivation and their effect on the learning style of the student is less present in the literature. Renwick and McPherson (2002) have highlighted the issue of how motivational factors affect learning. Here the response is in both a positive way; enhancing motivation and negative, impeding the acquisition of new unestablished strategies. The issue of how students enjoy their playing and motivate themselves when playing seem to be the areas that have been highlighted by this case.

Mind wandering in connection with automatic practice is noted from the literature discussed in Chapter 2 and this participant reports experiencing this. She ratifies its presence as an issue in her practice. Of interest is the relationship between mind wandering and avoidance made salient in this student's responses. Failure to maintain alertness and mental engagement with the task can become a problem for students without the skills to engage and maintain their attention. A lot of this lies in the way the student perceives the task, either as interesting and engaging or otherwise. It highlights

the need for students to learn to discover interest in practice tasks and engage themselves effectively in the process of executing those tasks.

### **Researcher's evaluation**

The main issue for this student is the connection between enjoyment and the task. It is interesting that she relates enjoyment to the outcome and not so much to the process of achieving it. She needs to see a place for both rather than seeing them as mutually exclusive. Initially this student should see that the issue is to strike a balance between time spent playing for enjoyment and time spent exploring her playing in new ways. If she can learn to enjoy the process of exploring and discovering new things in her practice she will find practice more fulfilling and will enjoy both the outcome and the process that leads to it. The concern for this student should be how she can come to enjoy the process of engaging in learning new and challenging aspects of her playing. Hopefully she can become motivated to discover her own solutions to problems with the sound.

## Chapter 6

### Case Study – Student B.

This fourteen-year-old male has been learning the cello for five years from five different teachers. He achieved a moderately high result on his 5<sup>th</sup> Grade cello exam (A.M.E.B.) during the period between the training interviews. He attends a private boys' school.

#### Procrastination

The first main theme for Student B was the issue of motivation to practice and the main issue was, by his own admission, procrastination.

**Interviewer:** Is practice ever boring? **Student B:** Um... some of the time, yeah. If I've got... I am interested in the piece... I like the piece, well ... not necessarily.. but **Interviewer :** So it's really if you like the piece or not. **Student B:** Yeah, and also how busy I am, like, if I am thinking about other things, then...**Interviewer:** Yep, um, is practice ever difficult? **Student B :** Practice itself, no. **Interviewer:** starting practicing? **Student B:** Um, some of the times I guess, yep... procrastination and that sort of thing.

He identifies this issue in relationship to his failure to maintain a routine:

**Interviewer:** Do you think you could actually improve the way you practice?

**Student B:** Yes **Interviewer:** Have you got any ideas how you could do that?

**Student B:** Um... a lot of it is... actually getting started on it... um... and then I guess developing a pattern of... doing it at a set time... **Interviewer:** A routine?

or... **Student B** Yeah.. but I am not very good with routines, just generally ... so...

He enjoys playing pieces he knows more, probably because he can play them and derives pleasure from this rather than tackling music he cannot play. There is not much indication that he is motivated by a challenge. He does not really enjoy practicing as he admits in the pre-training though when he does practice he notices an improvement.

## **Interest**

He relates that his level of attention is usually determined by his interest in what he is doing. Generally, if he is enjoying a piece, he will be interested in it and give it attention. Conversely, if he dislikes a piece it will receive less attention. Otherwise he is somewhat elusive about what interests him and why:

**Interviewer:** Do you think you are good at paying attention? **Student B:** If I'm interested in it, yes, if not, no. **Interviewer:** So... when you want to be... **Student**

**B:** Yeah... um... I guess it's not so much want, It's more if I am interested, if I find something, even just in class if there's something that I am not very interested in, then I'll just do other things or think about other things, but if there is something I am actually quite interested in I will focus on that and become involved with it.

**Interviewer:** So, what sorts of things capture your interest? **Student B :** Various things.

He does not elaborate on this, suggesting that unless he has a pre-existing interest or an extrinsic interest is sufficiently novel to capture his interest, he will only respond vaguely if at all. He has an idea about attention involving effort, which he reveals when he says that it generally requires a lot of attention to learn something new, depending on how hard it is. In terms of distraction, he finds that other concerns can prove distracting. He makes a number of vague statements like “and that sort of thing”, “not really” and “not anything in particular” that express a lack of commitment to his responses. It is tempting to conclude that this student did not really connect with the training papers to any great degree. As an example of procrastination, this student did finally get into the training papers, but had not dealt with them between the pre-training interview and the post-training interview and had only read them through cursorily before the post-training interview that was conducted by the research supervisor. He finally submitted his journal to the researcher by e-mail and then agreed to a supplementary post-training interview conducted by phone. He was agreeable to doing the training but had just not got around to it.

## **Reflection**

By way of reflection, some of the responses of this student are of note.

### **The focus and width of our attention –**

When attending in a broad way, I was not thinking about anything in particular, however I was more aware of what was happening around me. When attending in a focused way, I was only focused on one thing at a time and the other things were blocked out.

He reiterates the information presented on page 8 of section one of the training papers in his journal. It could be suggested that in doing this he is trying to clarify for himself the concepts being presented by expressing it differently using his own words. Alternatively, he is just writing the information out again because he cannot be bothered thinking about it, but this is unlikely, because soon after he makes a statement that shows a level of reflection.

**Experiencing two or more things at once –**

I think that I hear and see at the same time. To focus on what I am hearing, or to pay particular attention on what I am seeing, my attention then jumps from them and back again in quick succession.

And later :

I think that you can pay attention to multiple senses at the one time. If you are paying attention to all of your senses, you are focusing in a broad way. If you are paying attention to one or two senses, you are attending in a focused way.

So it seems that at least in this instance he makes some connection with the training papers and is considering the information presented. His observation is also interesting, being that when we attend in a broad way we can experience things simultaneously, but when we attend in a focussed way we have to switch attention between different things. Whether this is what is actually happening or whether different mental mechanisms are associated with the different modes of attending is an interesting question.

### **Effects of the training.**

In commenting on the effect of the training papers, he makes general reference to that they will probably help him to enjoy his practice more, just by helping him to become more efficient and take less time and get more done. This will only be the case however if he manages to act on the training.

### **Relationship to existing literature**

Hallam (1998) notes the significance of motivation in Chapter 5 of *Instrumental Teaching*. It may be that this student is highly geared towards extrinsic factors in motivation as suggested by his comments. While this study is not primarily concerned with issues of motivation, it is highlighted by this case that improving attention skills depends on an existing level of student motivation, preferably intrinsic.

### **Researcher's evaluation**

This student provides an important challenge for the training, and highlights the issue that students will only benefit from the training if they connect with it, understand it and apply it. It proved difficult to even get this student through the different stages of the research. Again, the major issue is motivation. For this student it seems he does not have much intrinsic motivation apart from a sense of obligation. His circumstances do not seem favourable to his developing an interest - many other concerns appear to take priority. Again, a student's individual choice to engage in developing his or her interests seems an irreducible position.

## Chapter 7

### Case Study - Student C.

This fourteen-year-old girl has been learning Suzuki violin since age one. She comes from a musical family; her mother is a violin teacher and other family members play and teach instruments. She was formerly a student of the researcher for a year and she has had five other teachers including her mother. She attends a co-educational government school. She undertook a 7<sup>th</sup> Grade violin exam (A.M.E.B.) while doing the training papers.

#### Deficiency and frustration

The emergent theme for this student seems to be a sense of frustration about some areas of her playing, which she readily communicates in the initial interview. She is annoyed by her lack of ability when it comes to sight-reading, her perceived lack of a proper routine, lack of knowledge about practice, music and mind wandering. In the pre-training supplementary responses she writes:

**Question:** Do you think that you are good at practicing? **Student C:** Nope, I don't think I am good at practising. I don't have a proper routine. **Question:** Is practice ever difficult? Why and When? **Student C:** Yep, practise can be difficult because I'm not great at sight reading - I get annoyed because I'm not playing it properly, so yeah, it is hard because of sight-reading. **Question:** Do you think you could improve the way you practice? How? **Student C:** Yes, by concentrating more and learning everything about music.



Also of relevance she adds in the pre-training interview:

I've got a really bad concentration problem; I will just look out the window and keep playing or something

This student seems to have a clear understanding that things could be better than they are, but she seems less sure about how this could be achieved. This is illustrated by a response in the post-training interview where, when asked whether she is good at attending, she responds in a qualified way:

**Interviewer:** Do you think you are good at paying attention? **Student C:** I wouldn't say I am good at attending. I am *better* at attending.

Her response implies that there is an awareness of an area of improvement still to take place. This 'feeling of deficiency' means that when she is presented with the training papers, she engages with them fairly strongly. On the one hand this concept means this student is open and keen to try things that could help her understand things more or help her improve. On the other hand she feels a sense of frustration that things are not as good as they could be.

### **Mind wandering and distraction**

She establishes quite quickly what she perceives as her problems when it comes to attending. She expresses that when she knows a piece, she experiences a separation between what she does and where her mind goes.

**Interviewer:** Does your mind always stay on track? **Student C:** No **Interviewer:** Or do you sometimes wander off? **Student C:** It sometimes just like... wanders off and looks at the heater or something [pause] **Interviewer:** Does your mind go for walks more easily in scales than anything else? **Student C:** Ah, no, not in sc... it goes more easily in pieces than scales. **Interviewer:** So not when you are learning a piece, but later when you have got your fingers around it **Student C:** Yep **Interviewer:** And then your mind is just free to go for a wander **Student C:** Yep.

As mentioned in the previous excerpt, she will just look out of the window and keep playing. Later on, she cannot remember what she has just been doing. Again, she has a sense that her attention should be somewhere else because she says she could concentrate more. She expresses this later in the pre-training interview by saying that she could resist the urge to look out windows and try to focus on something. This is the ‘will power’ or ‘make yourself do it’ approach. She faces a range of external distractions in her practice environment related to living in a busy household. Other music lessons occur in the house and miscellaneous noises. There is plenty of distraction available in the absence of her ability to control her attention.

### **Awareness of Internal Processes**

Another important issue with this student is that she has an undeveloped awareness of her internal processes. She is not really aware of what the training papers mean by verbal thought and how this relates to her attention skills. She notes that verbal thought causes her distraction even though she seems unaware of what it is. The following excerpt is taken from her journal:

Although I am more aware of focussing, I think I have just been trying really hard to concentrate it's kind of stuck there, this little voice saying 'concentrate, concentrate' gets a little annoying because it does distract me.

She is not really aware of the kinds of things she is attending to. Another area where this underdevelopment is apparent is in her awareness of physiological sensations as they relate to her playing. In response to the training papers question about what senses tell her about her playing, she responds in her journal:

The senses that tell me about how I am playing are my ears, that's about all, sometimes my eyes.

She notes this also in her journal while working through the training papers:

I have touched my violin so many times and not realised how this felt.

She later notes improvement in the action when she does attend to these sensations especially with her shifting. Having gone through the training papers she says in the post-training interview that the training papers have made her more aware of that sense of feeling.

## **Reflection**

Later, when she is looking at the training papers she exhibits some expanding reflection on what attention means to her. It quickly becomes apparent that she relates more to the concept of 'concentration' and so deals with the subject more in those terms. She relates

her experiences of concentrating to those of doing her work in school, and then relates it to her practice and awareness while practicing. Another aspect of her responses that suggests reflection is the way that in the journal she seems to be trying out short phrases like “an urge of concentration”, “going into concentration mode”, and “being in her awareness” and “bringing her awareness to her”. She seems to be experimenting with different ways of describing her experiences. This, together with statements that she has never thought about this before, is indicative that she is experimenting with meaning and how it relates to her experience. She is engaging in a process of reflecting about her ability to pay attention or metacognitive reflection.

### **Improvements and noted effects of the training**

In terms of effects of the training, this student responded strongly to the exercises in section one involving pictures and diagrams. This interest in these exercises may have further created openness and draw her interest to other ideas. She later talks about the effect of the training papers concerning her new resistance to distractions. She feels that she can connect with the idea of focussing in her practice. She also indicates that she is trying to have a go at fixing things by herself, before she seeks help.

### **Relationship to Existing Literature**

The issue of students feeling frustration with their lack of knowledge about how to practice or approach their playing has not been dealt with in the existing literature. It would be interesting to deal with the issue of whether students feel they are provided with enough knowledge about how to practice effectively, though this is not within the scope of this study. Langer (1998) deals with the issue of mindless practice and mind wandering as being salient for instrumental musicians. Student's awareness of internal processes has also not been dealt with by the current literature. Part of this problem could be that education is still predominantly content based with students being taught what to learn without being taught how to learn. These issues will be discussed further in the concluding chapter of this study.

### **Researcher's Evaluation**

This student made the most obvious changes as a result of the training. It appears she had not previously considered the issues presented by the training papers and responded most strongly of the students in terms of change in her awareness of her internal processes. It appears the ideas the training presented were different than those she had considered, if she had any previously considered ideas. She took the opportunity to engage with the training papers and there is evidence of reflective thought and her exploration of her ability to pay attention as a result of the training. She also reported several changes to her approach to practice as a result of the training.

## **Chapter 8**

### **Discussion and Conclusions**

#### **Introduction**

In this chapter the main themes raised by the case studies will be explored. A study employing IPA aims to identify themes and connections between them. The nature of this study requires clarification and a note of caution concerning what is and is not being presented. This study aims to explore the nature of experiences of different phenomena in selected students and the relationships and ideas, mediated by language, that these students had about them. It is not the purpose of this study to attempt to generalise results concerning populations. A discussion of the findings of the research and a comment on the effectiveness of IPA in analysing the case studies will be made and finally, implications for future research will be drawn.

#### **Motivation**

The first issue that was raised as salient in all three case studies was the relationship between student motivation and how they related to the training papers. Issues that arose included enjoyment of playing. These students enjoyed playing pieces that they knew, but when working on new material they often encountered motivational hurdles or barriers. The line between the perception of an activity as work or as fun was an important one. Related to this was the issue of the lack of a feeling of knowledge about how to approach problems. The three students had different issues concerning the process of learning. The

training also exposed something of the role of the motivation of these students in regard to practising their instruments and, in the case of Student A, how this affected her response to the training papers.

Another aspect of student motivation was the satisfaction with their current learning styles and their perception of deficiency or adequacy. Student B seemed to feel, rightly or wrongly, a high level of adequacy with his current learning strategies and showed the least impact or interest in the training of the subjects. Student A certainly engaged with the training papers, but also perceived issues with regard to how she would relate to them that have been described in Chapter 5. In terms of reflection and initial gain of understanding, Student C displayed a perception of deficiency, which lead to a high level of motivation to engage with the training.

The case studies have highlighted the importance of students becoming motivated to want to attend more effectively. The student can become intrinsically motivated to attend, but not know how to attend most effectively, but conversely, presenting the student with knowledge about how to attend will falter if the student is not motivated to want to attend in the first place. While the training papers identify and address this need to cultivate interest, this is still reliant on the student's desire. In a sense, the training papers assume a student's desire to want to learn more about how they can pay attention effectively in their practice. This means they will be most effective where a student is motivated. The training papers are addressed to students who want to learn how to attend more effectively but may not necessarily know how. The subjects all had some level of interest in the training, and it must be remembered that the cases represent only the student's



initial exposure to the ideas presented in the training papers, and one of the issues the students deal with after exposure to them is whether they will find them useful in the long term. This could only be ascertained by means of a longitudinal study to follow up on student responses.

### **Mind wandering**

The original contention of the study was that students encounter specific problems when it comes to mental use in their instrumental practice. The student's description of these problems validates this contention. The case studies provide evidence for the nature and the character of some of these problems that were outlined in Chapter 1 as present in the minds of the subjects of the case studies. Mindless practice or automatic practice is a problem of particular issue in instrumental musicians' practice and the case studies produced good testimonies of this.

Strategies for overcoming mindlessness in practice are important for developing more effective mental approaches. It is notable that the students raised these issues as being of concern when it came to how they pay attention in their practice and were willing to describe these experiences. The connection with playing pieces after initial learning was made strongly both in the cases of Student A and Student C. Student A highlighted the problem with mind wandering when she said that she felt it meant she had to do that section of the material again. Also the nature of 'vaguely out' and recollection gaps were also described and contrasted with mind wandering involving thinking about something else. The presence of these descriptions of phenomena validates the employment of IPA

in studying this issue. IPA research provides an important corollary to quantitative studies. The student's descriptions of these phenomena provide the psychologist and educator with insight not only into the nature of the problem by relating through language to common experience, but also inform, how it is experienced by the subject and its practical implications. The use of IPA in this study has also initiated a move towards understanding the complexity of these issues in terms of factors associated with different phenomena such as student motivation and attention. An example of this is the relationships of pleasure and frustration to engagement and avoidance in the case of Student A.

### **Understanding of mental processes**

The third major issue highlighted by the cases was the nature of student's perceptions and understanding of their mental processes. It appears that, in many cases, the student's conceptions of their mental skills were un-developed on both a conceptual and experiential level. There were a number of comments by students that they found the experience of examining the functioning of their mental abilities unfamiliar. The students also felt that no one had taught them how to use their ability to pay attention and it was just something they had learned themselves. It could be argued that it is important to understand something if it is to be used well and that this is particularly the case with mental abilities. Further, this lack of awareness about mental processes points to a deficiency in the educational system where the issues of how to use the mind in learning and other modes of functioning such as performance is touched on slightly, if at all.

### **Poor physiological awareness evident**

Another issue of particular importance is that of physiological or physical awareness and how to address it in students. This includes awareness of sensations associated with touch, position, and movement. Conable and Conable (1998) point out, movement is one of the basic skills of instrumental music: "the best kept secret among instrumentalists is that they move for a living".<sup>1</sup> Instrumental music educators need to educate students in both physical and mental use as well as music. These students were largely unfamiliar with feeling states associated with position and movement, not having had their awareness directed to the way sensations feel when they move in a certain way.

### **Initial outcomes of the training**

The main outcome from the training seems to be the initiation of reflection by the students on the way they pay attention. This is to be expected, given the nature of the training exercise. Insight was also gained into how the students thought about their ability to attend. What is interesting was the significance of mind wandering in two of the case studies – those of Students A and C. It must be noted that little pertinent material was gained from Student B. On the initial exposure to the training, the main effect seems to have been a provocation of metacognitive reflection. These students showed more reflection on their ability to pay attention and their mental processes as they related to practice. They did not, however, display much evidence of practising the skills presented, which probably lies at a later stage. It appears the training papers can be effective in

raising student awareness and reflection of these issues and more so if the students engage with the training papers to a greater degree.

### **Student responses to the training**

The students related to the training at different levels, some of which have been made apparent in the case studies. These responses were generally positive, although the students felt there was too much material presented, or had problems with it due to time constraints.

### **Directions for future research**

While this study has not sought to examine how widespread these conditions are in different populations of music students or at different ages, it may be suggested that investigating these other areas would also be worthwhile in bringing to light the extent to which students are or are not aware of their mental use. If such studies could be devised they would provide more useful data to help inform theory and practice on the subject of mental training with string students in particular and other instrumental music students as well. Another area this study has not sought to examine was the effectiveness of the training papers using quantitative methods. This study has suggested that students benefited from the training in terms of an expanded reflective awareness and metacognition of how they employ their minds in practicing their instrument. It is also recognized that the training and attention based learning strategies presented in this study have a much broader range of possible application than just to instrumental music practice.

This study examined students for a limited period. It would be interesting to follow this study with a longitudinal one. It should be recognized that the students examined in these case studies did not make significant progress in applying the training and future research could look at this aspect. Further understanding of the role attentive processes play in the process of learning at both a practical and a theoretical level will continue to inform and help in devising new strategies for training attention and other mental skills and it is hoped in the future development in these areas will be forthcoming. Periodic review of the training with a view to enhancement will hopefully be an ongoing concern of music education research. There is also the whole area of the application of attention in relation to a range of mental processes and actions such as those involved with reading music and imagining the aspects of playing. Unfortunately it seems that these issues have yet to be approached.

## **Conclusion**

This study has examined an issue that should be of concern to instrumental music educators and is deserving of further research. It argues that students should be provided with tools and resources to facilitate their learning in the form of information about how to become more effective learners. It has examined a number of mental skills that are used in instrumental practice situations, providing instruction to students in how to become more aware of and manage these personal resources. It is hoped that the training papers will provide a resource to students who wish to pursue the idea of developing and training their mental skills and a tool that teachers can also use to help instruct their students to improve their learning. Finally it is hoped that this study will provide a profile for the idea of training mental skills as an important adjunct to the effective education of string students and raise the issue of mental training as an adjunct to education in general.

## **APPENDIX A:**

### **Introductory Letters and Consent Forms**



28th February 2000

## **Explanatory Statement (student)**

### **Research Project Title:**

Strategies for Attention control for Intermediate Standard Adolescent Students.

My name is Matthew Cohn and I am a qualified and experienced music and instrumental teacher. I am conducting research under the supervision of Dr Jane Southcott a lecturer in the Faculty of Education at Monash University Clayton Campus towards a Master of Education Studies.

I am conducting this research to find out if there are any noticeable changes in the way students approach practicing their instruments when they are taught about their ability to attend and imagine and how they can use these abilities to learn while practicing.

I hope that this research will help in the development of strategies for learning to control attention to help students improve the way they learn when they are practicing.

I am looking for students between the ages of 12 and 16 who play violin, viola, cello or string bass who are willing to participate in this research. The research will consist of a number of parts, the most important of which will be the working through 2 training papers that will teach students about their ability to pay attention and imagine and how they can use them to help them learn when they practice their instrument. The papers will be broken up into sections that should take around 20 min a day over 2 weeks at the student's leisure. They will also be asked to keep a diary of their experiences and thinking while they are working through the papers. A copy of this diary will be made and kept by the researchers at the completion of the training. The original diary will be returned to the student after a copy is made.

We will wish to meet with the student before and again after they have worked through the training papers. During these meetings we will want to record on audio tape an interview with the student for 30 min which ask the student about their practice habits, their opinions about practicing and their understanding of their learning abilities. We then wish to record a 30 min video of the students instrumental practice.

I will keep a copy of the collected data, since data must be stored for five years according to university regulations. The data will be analyzed and used for the completion of a research report, which will also be kept by Dr Jane Southcott. Reference may also be made to the data in an article to be published in a scholarly journal. No finding that could identify any individual participant will be published.

**If you agree to take part, you can withdraw at any time by expressing your desire to withdraw to the researchers either verbally or in writing. You may also choose not to answer some or any of the questions. Your participation in the study will be regarded as entirely voluntary.**

**Pto.**





It is a condition of ethics approval that the student's consent to participate in this research must be witnessed by an independent adult ie not a parent or guardian of the student or a researcher. This is to verify that the student is willing to take part in the research of his or her own volition. For convenience sake, this verification will be completed in the presence and with the approval of an appropriate independent adult.

The Ethics Committee also requires a 2 week period following the completion of the consent forms before the research can commence. Once these forms are completed satisfactorily, the researchers will phone you to arrange an appropriate time and place for the initial interview. The researchers hope to interview the students in a relaxed environment so as not to add to their school day. Interviews can be conducted at the location you nominate, either at your residence or that of the researcher at a time that is mutually convenient. Dr Jane Southcott who is an experienced teacher and music educator will conduct the interviews.

This research is not associated with the student's school in any way although the school will be made aware that it is taking place.

If you have any queries or would like to be informed of the research findings, please contact Dr Jane Southcott telephone 99052810 fax 99054007

Should you have any complaint concerning the manner in which this research (99/482) is conducted, please do not hesitate to contact The Standing Committee on Ethics in Research on Humans at the following address:

The Secretary  
The Standing Committee on Ethics in Research on Humans  
Monash University  
Wellington Road  
Clayton Victoria 3800  
Telephone (03) 9905 2052 Fax (03) 9905 1420  
Email: SCERH@adm.monash.edu.au

Thank you.

Matthew Cohn Tel. 95322356

Address:

25 Nepean Avenue

Moorabbin 3189

Email mcohn@bigpond.com



## Informed Consent Form

**To be completed by the student -with the witness of an appropriate independent adult ie not a researcher, parent or guardian..**

Project Title: Strategies for Attention Control for Intermediate Standard Adolescent Students

I agree to take part in the above Monash University research project I have had the project explained to me, and I have read the Explanatory Statement, which I keep for my records. I understand that agreeing to take part means that I am willing to:

- be interviewed by the researcher
- allow the interview to be audio taped
- allow a video to be taped of myself practicing my instrument
- Participate in working through the training papers.
- Make myself available for a further taped interview with a further video of my practice being taken after I have finished the training papers.

I understand that any information I provide is confidential, and that no information that could lead to the identification of any individual will be disclosed in any reports on the project, or to any other party.

I also understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without being penalised or disadvantaged in any way.

### **Please tick the appropriate boxes**

- a The information I provide can be used in future projects that have ethics approval as long as I am not identified by name or contact details.
- 3 The information I provide cannot be used by other researchers without asking me first
- 3 The information I provide cannot be used except for this project

Name of Student: ..... (please print)

Signature of Student: .....

Date:.....

### **Independent witness to participant's voluntary and informed consent:**

I believe that..... understands the above project and gives her/his consent voluntarily

Name of Witness: ..... (please print)

Signature of Witness: ..... Date:.....

Address: .....Pto.



### **Informed Consent Form Continued**

**To be completed by the student -with the witness of an appropriate independent adult- iejjot a researcher, parent or guardian..**

Project Title: Strategies for Attention Control for Intermediate Standard Adolescent Students

.After the informed consent form is completed, the researchers will contact your parent guardian to obtain their consent for your participation in the research. The researchers therefore request the following information:

Name(s) of Parent(s) or Guardian(s).....

Contact Phone Number : .....

Contact Address : .....

.....(post code) .....



28th February 2000

## **Explanatory Statement (P/G)**

### **Research Project Title:**

#### **Strategies for Attention control for Intermediate Standard Adolescent Students.**

My name is Matthew Cohn and I am a qualified and experienced music and instrumental teacher. I am conducting research under the supervision of Dr Jane Southcott a lecturer in the Faculty of Education at Monash University Clayton Campus towards a Master of Education Studies.

I am conducting this research to find out if there are any noticeable changes in the way-students approach practicing their instruments when they are taught about their ability to attend and imagine and how they can use these abilities to learn while practicing.

I hope that this research will help in the development of strategies for learning to control attention to help students improve the way they learn when they are practicing.

I am looking for students between the ages of 12 and 16 who play violin, viola, cello or string bass who are willing to participate in this research. The research will consist of a number of parts, the most important of which will be the working through 2 training papers that will teach students about their ability to pay attention and imagine and how they can use them to help them learn when they practice their instrument. The papers will be broken up into sections that should take around 20 min a day over 2 weeks at the student's leisure. They will also be asked to keep a diary of their experiences and thinking while they are working through the paper. A copy of this diary will be made and kept by the researchers at the completion of the training. The original diary will be returned to the student after a copy is made.

We will wish to meet with the student before and again after they have worked through the training papers. During these meetings we will want to record on audio tape an interview with the student for 30 min which ask the student about their practice habits, their opinions about practicing and their understanding of their learning abilities. We then wish to record a 30 min video of the students instrumental practice.

I will keep a copy of the collected data, since data must be stored for five years according to university- regulations. The data will be analyzed and used for the completion of a research report, which will also be kept by Dr Jane Southcott. Reference may also be made to the data in an article to be published in a scholarly-journal. No finding that could identify any individual participant will be published.

**If you agree to have your child take part, you can withdraw at any time by expressing your desire to withdraw to the researchers either verbally or in writing. Your child may also choose not to answer some or any of the questions. Your child's participation in the study will be regarded as entirely voluntary.**

**Pto.**



It is a condition of ethics approval that the student's consent to participate in this research must be witnessed by an independent adult ie not a parent or guardian of the student or a researcher. This is to verify that the student is willing to take part in the research of his or her own volition. For convenience sake, this verification will be completed in the presence and with the approval of an appropriate independent adult.

The Ethics Committee also requires a 2 week period following the completion of the consent forms before the research can commence. Once these forms are completed satisfactorily, the researchers will phone you to arrange an appropriate time and place for the initial interview. The researchers hope to interview the students in a relaxed environment so as not to add to their school day. Interviews can be conducted at the location you nominate, either at your residence or that of the researcher at a time that is mutually convenient. Dr Jane Southcott who is an experienced teacher and music educator will conduct the interviews.

This research is not associated with your child's school in any way although the school will be made aware that it is taking place.

If you have any queries or would like to be informed of the research findings, please contact Dr Jane Southcott telephone 99052810 fax 99054007

Should you have any complaint concerning the manner in which this research (99/482) is conducted, please do not hesitate to contact The Standing Committee on Ethics in Research on Humans at the following address:

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Email: SCERH@adm.monash.edu.au

Thank you.

Matthew Cohn Tel. 95322356

Address:

25 Nepean Avenue

Moorabbin 3189

Email mcohn@bigpond.com



**Informed Consent Form for Parents/Guardians of Project Participants**  
**Strategies for Attention control for Intermediate Standard Adolescent Students.**

I agree that ..... (full name of participant) may take part in the above Monash University research project. The project has been explained to ..... and to me, and I have read the Explanatory Statement which I keep for my records.

I understand that agreeing to take part means that I am willing to allow ..... to:

- be interviewed by the researcher
- allow the interview to be audio taped
- allow a video to be taped of themselves practicing their instrument
- Participate in working through the training papers.
- Make themselves available for a further taped interview with a further video of their practice being taken after they have finished the training papers.

I understand that any information.....provides is confidential, and that no information that could lead to the identification of any individual will be disclosed in any reports on the project, or to any other party.

I also understand that ..... 's participation is voluntary, that s/he can choose not to participate in part or all of the project, and that s/he or I can withdraw at any stage of the project without being penalised or disadvantaged in any way.

**Please tick the appropriate boxes**

a The information ..... provides can be used by other researchers as long as my name and contact information is removed before it is given to them

a The information ..... provides cannot be used by other researchers without asking me first

3 The information ..... provides cannot be used except for this project

**Pto.**



## **Informed Consent Form for Parents/Guardians of Project Participants**

Strategies for Attention control for Intermediate Standard Adolescent Students

Continued:

Participant's Name: ..... (please print)

Participant's Age:.....

Parent's/Guardian's Name .....

Your relationship to the participant .....

If appropriate, reason(s) why s/he cannot give written consent:

Signature: ..... Date:.....

Parent's/Guardian's Phone Number .....

To assist the researchers in getting in touch with you to arrange an initial interview time we request that you nominate a time when it would be convenient for us to contact you about the interview (ie weeknights after (time), weekends, evenings, mornings. Before/ .After (time), A.H. B.H. ) Unless nominated otherwise the researchers will only contact you between the hours of 9am-9pm.

A good time to contact me would be ..... on the above phone number.

Please detach the Explanatory Statement and return the Informed Consent Form to the Researchers (a Stamped and Addressed Envelope has been included for your convenience). c/ - Matthew Cohn 25 Nepean Avenue Moorabbin 3189.

## **APPENDIX B:**

### **Interview Questions**



## **Questions for interview pre training**

### **Section 1 . Details About the students usual practice outside the study and practice conditions**

1. Do you do regular practice or just now and again?
2. How often do you practice?
3. Do you break up your practice session or do it all at once?
4. If you have a break while you are practicing how easy or difficult do you find it to pick up from where you left off?
5. How many things do you usually do in a practice session?
6. When do you usually practice? [What time of the day? does it vary?]
7. When you practice, do you usually feel tired, refreshed, worn out, bored, normal?  
[comment]
8. How long do you practice for usually?
9. What is the longest you have ever practiced?
10. Where do you practice? [do you practice in the same place all the time or in different places?]
11. When you practice are you usually alone or are other people around?
12. Does anything make it difficult for you to practice?
13. Does anyone listen to you practice? [often or only occasionally- do they make any comments?]
14. Does someone make you practice?

### **Section 2 Student's Attitude to Practice**

1. Why do you practice?
2. Do you enjoy practicing? Why or why not?
3. What kinds of things do you enjoy practicing most? [Scales? Pieces? Studies?]

4. Is practice ever boring? [Why and When? ]
5. Is practice ever difficult? Why and When?
6. Do you feel that you improve when you practice? [how quickly do you improve?]
7. Do you think that you are good at practicing? Why?
8. Do you think you could improve the way you practice? How?
9. How important do you think it is that you pay attention to what you are practicing?
10. Do you think your muscles or your brain have to do the learning when you practice?

**Section 3 How the student approaches their practice (get some idea of the student's thoughts on their learning style).**

1. Do you feel that you know how to practice?
2. How do you learn a new piece?
3. How do you practice a new skill?
4. Does the amount of attention you give to your practice change during the practice session? [why do you think this is?]
5. When you have problems playing the music what do you do?
6. What do you do if you make a mistake when you are practicing a piece?

What speed do you usually play the music to start with? [what is marked/slower/faster?]

7. When you play a piece of music how confident are you that you will be able to play it without mistakes?
8. How many times should you be able to play a piece correctly before you can say that you know it?
9. Has your teacher ever told you how to practice?
10. What kinds of things did he or she say?
11. Do you think a lot while you are practicing?
12. What are some of the things you think about when you practice?

13. Do you know how to practice in your head without your instrument?
14. How aware do you think you are of how tight your muscles are while you are playing?
15. How good do you think you are at listening to the sound that you are making while you are playing?
16. How aware would you say you are of how your arms move when you are playing?
17. Do you ever become aware of how stiff your legs are when you are playing?
18. How aware would you say you are of how your fingers are moving when you are playing?
19. Are you ever aware of how tight your shoulders are when you are playing?
20. Do you experience any pain when you practice? [where do you experience this pain?]
21. How aware would you say you are of the printed music when you are playing?

### **Mental Imagery Section**

1. Do you think you know what it means if I say that I can imagine music in my head? [yes or no?]
2. Are you good at seeing pictures in your mind?
3. Are your pictures a lot like seeing the real thing or only a little like seeing the real thing?
4. Do you usually think in words, in pictures or both?
5. Can you now imagine bowing the string to produce a sound?

### **Students understanding of and attitude towards Attention Abilities**

1. What does it mean to pay attention? [comment]
2. Do you think it is important to know how to pay attention?
3. Do you think you are good at paying attention?

4. Have you ever been taught how to pay attention?
5. Does it require a lot of attention to learn to do something new?
6. When you are reading, how often do you find that you have forgotten what you have just been reading?
7. Do you ever notice gaps where you have not been attending to what you have been doing?

END.

### **Questions for interview post training**

#### **Section 1 . What the student thought about the training.**

- 1.What did you think of the training? [what did you think the most interesting part of the training was?]
2. What kinds of things did you learn ? [ what kinds of things from your own reflections impressed you ?]
3. Are there any areas of the training or ideas that it presented would you like to follow up on?
4. If you had to write the training paper would you have done anything differently?
5. Are there any difficulties you have experienced in trying to apply the training to your practice?

#### **Section 2 Student's Attitude to Practice**

1. Has the training changed or effected the reason why you practice? How?
2. Do you think the training will help you to enjoy your practice any more?
3. Do you think that any of the ideas the training presented will help you in the way you think about or approach your practice.
4. Do you think the training has helped you to understand different ways that you could practice?
5. Do you think you could improve the way you practice? How?
6. How important do you think it is that you pay attention to what you are practicing?
7. Do you think your muscles or your brain have to do the learning when you practice?

#### **Section 3 How the student approaches their practice (get some idea of the student's thoughts on their learning style).**

1. Do you feel that you know how to practice?
2. Do you think you have a better idea of how you should go about learning a new piece?
3. How do you practice a new skill?

4. When you have problems playing the music what do you think you should do?
5. What do you think you should do if you make a mistake when you are practicing a piece?
6. What speed do you think you should play the music to start with? [what is marked/slower/faster?]
7. How many times should you be able to play a piece correctly before you can say that you know it?
8. Do you think any more about how you practice since the training?
9. What are some of the things you think about when you practice?
10. Do you know how to practice in your head without your instrument?

### **Mental Imagery Section**

1. Do you think you know what it means if I say that I can imagine music in my head? [yes or no?]
2. Have you thought any more about how you imagine since working through the training papers?
3. Do you feel that you have a better understanding about how you can use your imagination when you practice?
4. Are there any difficulties you have experienced in learning to imagine?
5. Do you think your ability to imagine on purpose has improved at all since the training?

### **Students understanding of and attitude towards Attention Abilities**

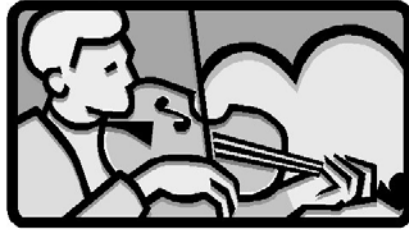
1. Do you have a better idea of what your ability to pay attention is?
2. Do you think it is important to know how to pay attention?
3. Do you think you are good at paying attention?
4. Does it require a lot of attention to learn to do something new?
6. Do you find you notice gaps where you have not been attending to what you have been doing since you went through the training paper?

END.

## **APPENDIX C:**

### **The Training Papers Training Attention for String Players**

# Training Attention for String Players




Training Papers

## FOREWORD

The Training papers should be worked through in order. You may wish to go back to previous sections if you want to think about them again. The papers need to be considered with care and reflection. Take your time moving through the sections and try to get as much out of them as you can.

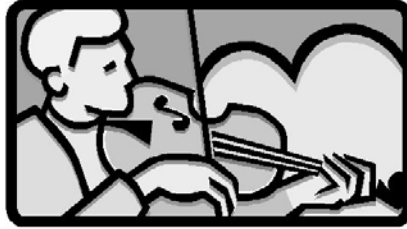
Take the time to record any thoughts and ideas that the papers provoke in the exercise book (journal) that you have been provided. **Please provide a date and time before each entry**. This is so we can understand the process of your thoughts during the training.

Feel free to experiment and try ideas out while you are practicing your instrument. Again, record any observations that you make in your journal. Also make note of any questions and issues that come to mind and record things that you do not understand.

During the training papers you will sometimes see a Book Icon . When you see this, please make an entry in your journal in response to the question or exercise. If you would like to ask questions or correspond during the training, you can do so by email. My email address is [cohnmat@yahoo.com.au](mailto:cohnmat@yahoo.com.au).



# Training Attention for String Players



## Training Papers

### Section 1

How good are your learning skills? **Learning skills** are the ways you learn things. We all have mental abilities that we use when we are learning. Some people use those abilities better than others. From the moment you pick your instrument up to practice, you apply your mental abilities to the task of learning to play a piece of music or to learn a new skill.

The question is, do you know the best way to do this? These training papers will help you to learn more effectively when you are practicing your instrument. They will do this by showing you how to use your ability to pay attention and your imagination in your learning.

Unfortunately the ability to pay attention is usually assumed in our society and in schools. Have you ever heard a teacher or someone else tell you to pay attention? We all have the ability to pay attention, but we are not taught **HOW** we could use this ability more effectively.

We are usually not taught about the mental actions that go on inside our heads or how we can improve them and make them work to our advantage. The aim of really good learning is to **learn how to become your own teacher**. As an instrumental musician you only see your teacher a very small amount of the time you practice your instrument, so it makes sense that you will make more progress if you are better at teaching yourself what to notice and how to remember it.

In the first part of this study we will look at **what attention is**. We need to become more aware of what our ability to pay attention is and how it works. Only then can we think about how we might improve this ability.

### **WHAT IS OUR ABILITY TO PAY ATTENTION?**

When we experience the things we see hear or feel we say that we are **aware** of them. When we direct our **awareness** towards something we say that we are **paying attention**. We may do this either on purpose or automatically.

#### **The Range/Scope of Attention – Attention is Limited**


Our ability to pay attention is **LIMITED**. Imagine if you could pay attention to everything your senses were experiencing at a single moment. Think about how different that idea is from how you actually pay attention.

When we pay attention we are observing **SOME** of the things going on around us in more or less detail. Lots of other things are happening, but because we don't pay attention to them, we notice them only a little or not at all. Our attention is so limited that we can only really pay attention to one thing at a time.

#### **Attention is directed – either automatically or deliberately**

Another quality of our ability to pay attention is the way it is **DIRECTED** to a specific area, place, object or thing. Sometimes we deliberately or intentionally direct our attention to things such as the things we want to. At other times it seems that our attention is drawn to or caught by different things automatically. We might become aware of the annoying sound of workmen digging up the road outside while we are trying to study.

## **The Timing Aspect of How we Pay Attention**

Another important quality to consider is way our attending takes place in time. One moment I am aware of what I can see, the next moment of what I can smell and then the next moment I am aware of something I am thinking about. When do you think the timing of the way you pay attention in a situation becomes important? Write a brief comment in your journal. 

Sometimes we are aware of things for a long time and at other times for only a moment. Sometimes our attention dwells on one thing and at other times it switches rapidly between different things. This is called the **DURATION** of attention.

Another aspect of the timing when we pay attention is the **SPEED** at which our attention moves between things. Our attention can move faster or slower between different things and we can also speed up or slow down our attention as it moves. Learning to fit our attentional actions into the correct place in a fixed span of time is a lot like the skill of fitting our music into the beats.

## **THE ENVIRONMENT IN WHICH ATTENTION WORKS**

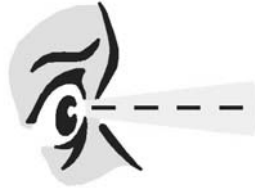
The environment in which our attention works is just all the different kinds of things we can pay attention to.

### **THE EXTERNAL ATTENTION ENVIRONMENT**

The External Attention Environment means everything we can pay attention to that comes from outside our minds.

Our **senses** provide us with different kinds (**mediums**) of information about the environment around us and ourselves. Sight information is what you can see at any moment and sound information is what you can hear. Sight and sound are the different kinds of **sensations** that we experience.

The different mediums of information we receive through our senses are:



- **Sight** – Information we receive through our eyes. Think about what the following things look like: a zebra standing in the sun on an African plain, a pen sitting on your desk, a violin sitting in its case. What can you see at the moment?



- **Hearing** –information we receive through our ears. Think about the sound of: a train going by, your best friend’s voice, twinkle twinkle little star played on a violin. What can you hear at the moment?



- **Smell** –information we receive through our nose. Think about the smell of: roses, dinner cooking, fresh paint, new leather. What can you smell at the moment?



- **Touch** –information we receive through our skin. Think about the feeling of: velvet, sand, soap, the pain of a pinprick. What can you feel at the moment?



- **Taste** – information we receive through our tongue. Think about the taste of: salt, lemon juice, chocolate, jelly. What can you taste at them moment?



- **Muscular** –Information we receive from our muscles. Think about the feeling of: running up stairs, swatting a fly, carrying a heavy bag, throwing a ball. Tense the muscles in your forearm and then relax them. What does this feel like?



- **Organic** – Information we receive about the internal workings of our bodily organs. Think about: being hungry, being sleepy, being thirsty, breathing. What can you feel at the moment?



- **Balance** – Information we receive about our orientation in space. Think about what it is like to hang upside down or to whirl around and get dizzy. What do you feel at the moment?

These **mediums** of information are the basis of what we know. When we are aware of these mediums our **attention** is directed **outwards** to our senses. We call this the **external attention environment**. This is all the outward things beyond our mind that we can direct our attention to including our own bodies and those things that occur beyond our bodies.

We can feel the sensations coming from our arms, hands and fingers as we move them. We can hear the sound we are making and we can see what is happening as we place our fingers down on the fingerboard. These feelings give us knowledge or **feedback** about our playing.

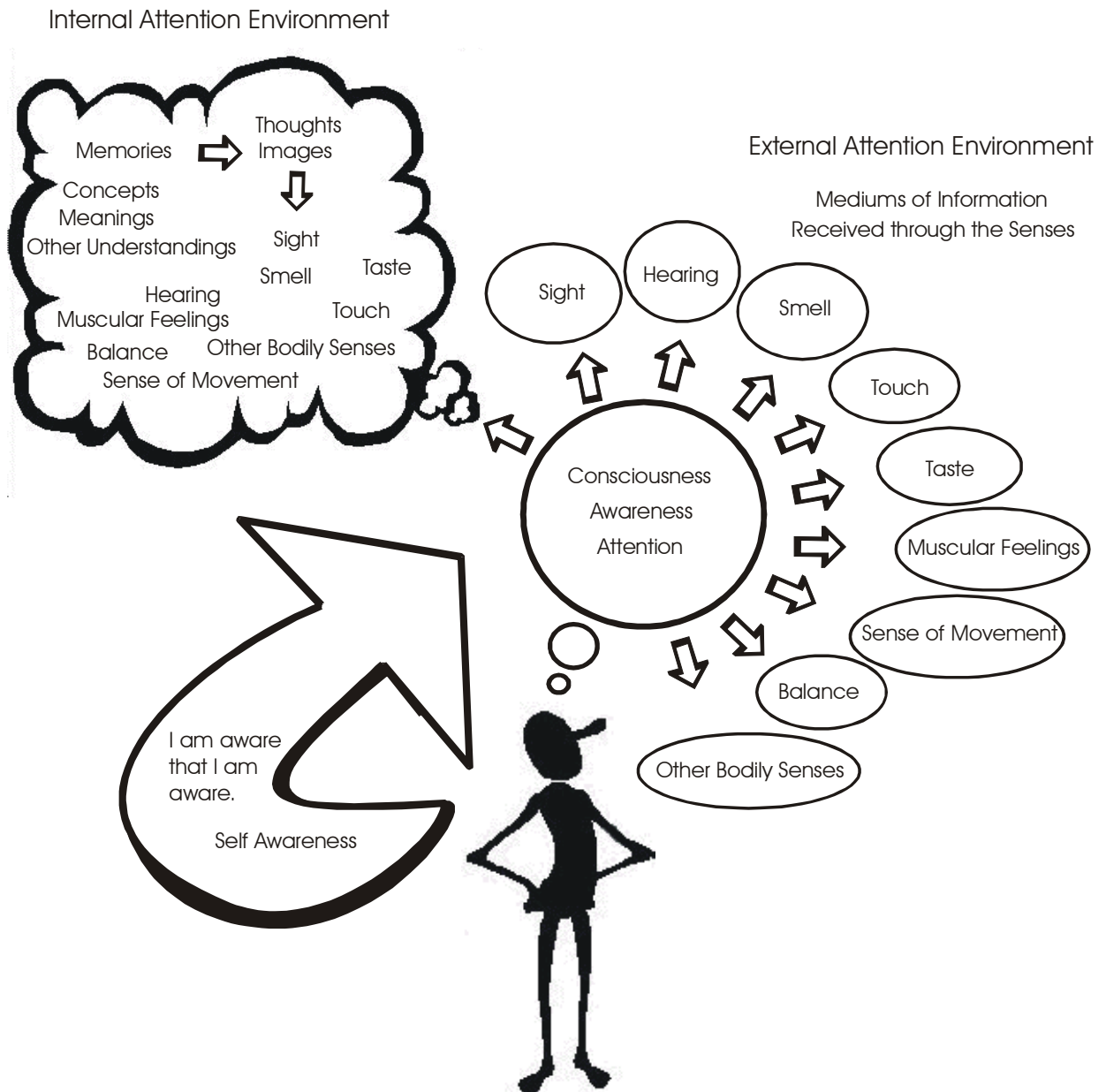
### **THE INTERNAL ATTENTION ENVIRONMENT**

When we attend to our thoughts and things that happen in our minds we are directing attention to the **internal attention environment**.

Each of the senses that make up the external attention environment is mirrored by memories and thoughts in our internal attention environment. In addition we create things like meanings, generalizations, rules and other kinds of thoughts inside our minds.

The external and internal attentional environments together form our **total attentional environment** or all the things that it is possible for us to attend to. It refers to both our own thoughts and the sensory information we receive.

### DIAGRAM OF THE TOTAL ATTENTION ENVIRONMENT




## **THE FOCUS AND WIDTH OF OUR ATTENTION**

A good way to think about our ability to pay attention is that it is like a torch or spotlight with an adjustable lens. If we **broaden** the lens, then the light is thrown more widely but less intensely. If we **narrow** the lense then the amount we can see is less, but it is lit more. This is a good analogy of how we pay attention in different ways.

Sometimes we are aware of what is going on around us in general without focusing in on anything in particular. This is a **broad kind of attention**. When we attend like this, we have a good overview of many of the things going on around us in quick succession. We get a broad perspective on what we are thinking about and an over all awareness of how things relate to each other.

At other times we focus our attention in on particular things. When we focus our attention, we become more and more involved in what we are attending to and as this happens we gradually loose awareness of other things going on around us. This is a **focused kind of attention**.

Try to notice when you are attending in a broad way and then when you are attending in a focused way and write about what was happening in your journal. 

## **SELF AWARENESS**

When you pay attention in a broad way you are aware of yourself as the person who is paying attention. As you become more immersed in what you are doing you loose this awareness.



## **HOW OUR EXPERIENCE OF PAYING ATTENTION HAPPENS**

Our brain is always turning the information it receives through the senses into what we experience as the world around us. It is our experience of our environment that we direct attention to. Our ability to pay attention works in an interactive way with this experience. Sometimes our brain brings things to our attention automatically and at other times we select something to attend to.

### **HOW WE PAY ATTENTION AUTOMATICALLY**

Our brain takes the sensations and works out what we are experiencing. It identifies boundaries and fills in the other details as it tries to identify the information as **objects** or things. Our brain uses the knowledge it has developed from past experiences to help it quickly make sense of the information it has received.

Our brain also works out the relationship between different objects. Some objects are identified as being in front of the other objects. We see these objects arranged in 3 dimensional space, with depth and width and height.

All of this takes place in just an instant before we become aware of what we are experiencing, we call it **pre-conscious processing**. This happens when our attention is drawn to something in the external attention environment that changes suddenly.

For example, our brain recognizes from the information it is receiving from our ears that a sound we are hearing is getting louder and more intense and it directs us to become aware of this sound and in a moment we become aware that we are in danger because a car is coming towards us.


## HOW WE PAY ATTENTION ON PURPOSE

We often have to make a decision about what we want to attend to. Once our brain has automatically sorted the information it has received from our senses, it then rapidly presents us with the result of its sorting. We then experience being aware of the things we are seeing, hearing and sensing. We can then use this information to choose to attend to different things.

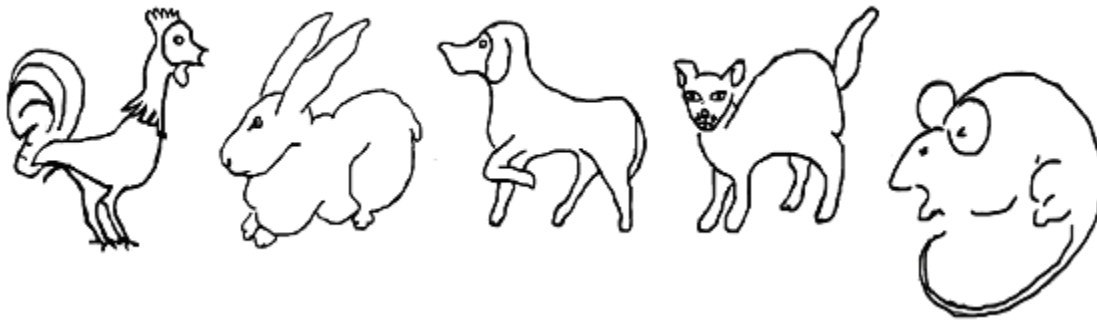
When we pay attention to something, we are drawing not only on the pool of processed information we get from our senses, but also from our memories of things we can attend to and, more importantly, things that we need or like to attend to.

## EXPERIENCING TWO OR MORE THINGS AT ONCE

From moment to moment our awareness moves over the sensory information we are receiving and this lets us know what is going on around us and in us. This continues all the time that we are awake. Sometimes when this happens it can seem like we see and hear and feel at the same time.

Consider at the moment whether you are hearing and seeing at *exactly the same time* or whether your attention is **jumping** from what you are seeing to what you are hearing and back again **in quick succession**. Reflect on this and make a note in your journal about what you think happens. 

Take a look at these pictures of animals. Can you identify each one? Write what you think each picture is underneath it.



### **ATTENTION AND AROUSAL**

Attention works on top of our physiology and our general state of arousal. This involves the level of the intensity of the sensations we are experiencing from our own body and also the emotional sensations we are experiencing. If you are tired you may be very aware of the sensations of fatigue you are experiencing but not very aware of what is going on around you. If we are experiencing a large number of sensations it becomes much harder to pay attention. Our physical state will effect how we pay attention.

### **LOW STATES OF AROUSAL**

We all know the experience of “waking up”. Have you ever heard someone say “wake up and pay attention!” When we wake up, we become more aroused. Sometimes this happens more gradually and at others it happens quickly.

We know that if we have been listening to a boring or irrelevant talk, what it is like to gradually tune out and either daydream or be lulled into a state of drowsiness where it seems like we are not really aware of anything. Some situations cause our brain to suddenly tune out or lower our level of arousal.

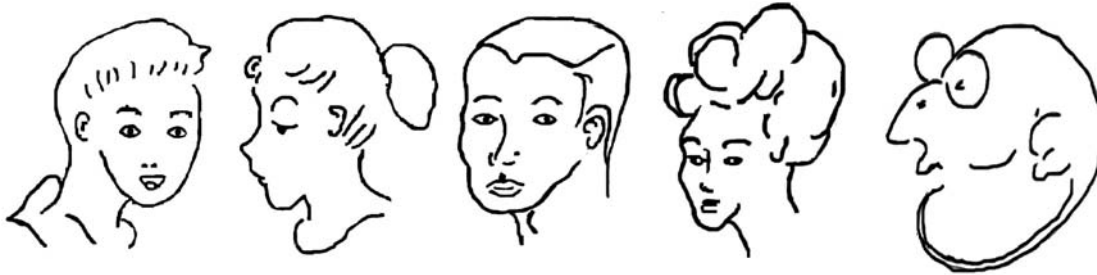
Sometimes we can experience a “snap to” response either because we realize we have “vague out” into a state of dispersed awareness. Like after a boring or irrelevant talk when we suddenly become aware that there are other kinds of noises and we then realize that every one is getting up and leaving because the talk is over. Part of our brain is activated that causes us to rapidly become more alert and aroused.

We can exercise some control over our brain’s ability to cause us to become alert. As with many things it is a mix of automatic and deliberate processes. Sometimes we can drag or snap ourselves out of a state of mental lethargy where we have inadvertently wandered into it. At other times it is in response to cues from our attentional environment.

How do we maintain arousal? We can control our state of arousal either externally through breathing and relaxation or internally by finding and maintaining interest and excitement in what we are doing. Failure to do this either results in boredom or in our tuning out.



Take a look at these pictures of people. Can you identify each one as boy, girl, man etc?  
Write what you think each picture is underneath it.



### **HIGH STATES OF AROUSAL**

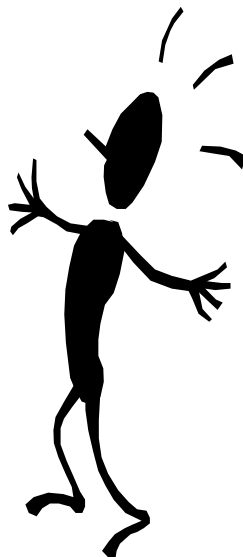
Sometimes over arousal can be caused by states of fear or panic and we make responses without thinking. Generally they can be driven by the rise of more intense sensations like feelings of muscle tension or emotional sensations in our brain and body. When we attend to these strong sensations and can't block them, our attention narrows or focuses easily onto them sometimes with bad results.

A psychologist highlighted this in a study where he related the story of a young woman who was diving in a 12 foot pool of water collecting golf balls who got into trouble and panicked. She was so focused on those feelings of panic and her need to get to the surface for air that she neglected to let go of the heavy bag of golf balls she was carrying or the weight belt she had on. She drowned still clutching the bag of golf balls and with her weight belt on !!!

Sometimes we experience an emotional state where chemicals released into our body or our brain cause emotional sensations that grow in intensity. These sensations can easily overwhelm or flood into our awareness like water through a crumbling dam. They can also distract us as they become more intense and make it difficult or seemingly impossible for us to concentrate on anything else. This kind of thing commonly happens when we feel depressed or anxious about something we are thinking about. Feelings of intense pain, tiredness or hunger have the same effect.

When we play our instrument, sometimes our body starts to get tired. The muscles send out more and more intense sensations to our brain, which flood into our awareness and make it harder to attend to other things. If you engage in intense exercise for a period of time you will notice how the muscles begin to send sensations of tiredness and pain, which rise in intensity. It takes a lot of concentration to run a marathon or compete in an Iron Man competition. These sensations interfere with our ability to attend to anything else and can totally distract us if we fail to block them out or properly divert our attention onto what we want to attend to. Other states like intense excitement can also distract us if we get too caught up in them so that they affect our performance.

From this we can see that there is an optimal level of emotional arousal and physiological arousal in attention. Too little or too much and we can't concentrate effectively.



## ATTENTION SETS



**Is it a rat or an old man with glasses?**

Did you notice that this figure was the same in both groups of objects? This shows us the way our brain uses its past knowledge and experience and knowledge of sets and groups of different kinds of things. It does this to draw up a set of expectations to help us understand what we are seeing. We sometimes see what we expect to see in a situation and sometimes we don't see things because we don't expect to see them.

When our brain sees what it expects to see we say that it does so because it has developed an **attention set**, based on our past experiences and understandings. An attention set is like a **pool of underlying knowledge** that effects how we pay attention in a situation. In a sense our attention can both be directed and blinded by attention sets. An attention set can also either broaden or narrow our ability to perceive things. This knowledge is constantly changing. What we do can effect this underlying pool of knowledge at any particular time.

As previous experiences recede in our memory we form generalizations from them. These generalizations about what to expect in different situations are part of what form an attention set. Subconsciously our mind is constantly matching internal maps and models to our experience of the world around us.

Recent things that have happened also effect our attention set, and this changes how we experience the next things that happen to us.


We all have habits that we have learned about how we attend to things, and some of these habits need to be changed if we are to learn more effectively. Our own mistakes are often hidden from ourselves unless we make an effort to explore what we are doing with our awareness.

Attention sets can be useful in that they help us to more quickly make sense of and become aware of what we are seeing. If we can expect and anticipate experiencing something then we can become aware of it more rapidly and also relate it to what we already know. On the down side, attention sets can become habits that can make us lazy in the way we attend, so we get locked into them and we don't explore for new possibilities.

An attention set is also a good example of how we attach **meanings** to objects, and these meanings are easily recalled when we see the object, for example we recognize a nose as being a part of a face and a face as being part of a person. These meanings are brought to the surface of awareness so that we can recall this information quickly if we wish to. Our brain does a similar thing with different kinds of sounds. You hear a sound and you recognize it as being the sound of a bird tweeting against a background of other noises.

A good example of this is what you are doing now as you read these words. You are seeing shapes of black ink on the page, which you understand to be a group of letters that form words and phrases. You easily know how to work out the meaning of the different shapes of black ink on the page.

A musician learns to do much the same thing with printed music notation. Instead of seeing a bunch of dots and lines and on the page the musician will learn to see intervals and scales and keys and even fingering on their instrument. They can connect the meaning of the dots on the page to patterns of sounds, fingerings and the movements of their body that they have to make to get the right sound from their instrument.

Try to notice and think over how you experience things – do you pay attention to them the same way or differently? 

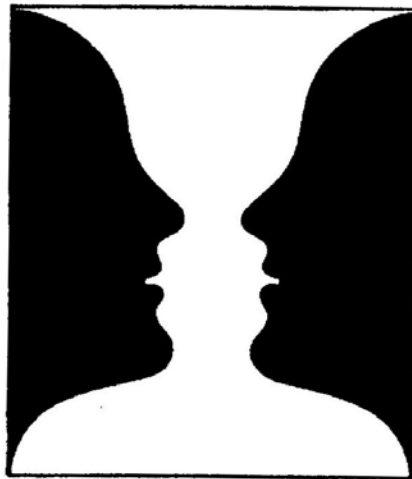


## WAYS WE ATTEND TO OBJECTS

When we pay attention to an object another effect is that it seems to stand out from the other objects around it. This is the case even if what we are attending to is actually further away from us than other objects. The object that stands out is called the **attention figure** and the other objects form a **background** to the figure.

We identify and attend to objects in the different attention fields by recognizing different features of the objects. First we become aware of the whole area with a broad kind of attention. We then select or choose different objects to which we direct our awareness.

Look at the picture below. The picture can be seen at least 2 different ways that “make sense” depending on how we attend to it. If you attend to the black objects and make them the figure it is the outline of 2 heads facing one another and the white part is a background to this. If you attend to the white part as the figure it is a goblet or old style drinking cup and the black parts are the background. Try to make the black and then the white the attention figure.



Notice how you switch attention between these attention figures. What is it like to experience this? Make a note about this in your Journal. 📖



**Look at the phrase in this box?**

**What does it say?**

**PLAYING  
IN  
THE THE  
BAND  
x**

**Check again just to make sure.**

**Next, Turn over the page....**

Most people on reading this box for the first time think it reads “Playing in the Band” when it actually reads “Playing in *the the* Band”. There is one “*the*” too many in the phrase. This is an important exercise in attention because it is an example of how we often fail to see things the way they really are because we only get enough parts of what we see to make a guess about what we are looking at. We then jump straight to the meaning.

This happens quite often in both our looking and listening. It is a good example of how we often see what we expect to see and miss the things that would tell us that it is different. Because we are very used to getting meaning from words we easily move to meaning as soon as we see a word. This sometimes helps us to save time and effort but if we are not careful it can be misleading.

As string players we often only glance with our awareness at the notes we are playing. We don’t check our notes thoroughly. We sometimes have blank spots where we are not aware of our sound at some point in time or we fail to tell if a note is really in tune or not. We also have big gaps in our knowledge of the movements we make because we do not follow them right through their course with our attention. Another thing we don’t do is explore those things in enough detail, we make wrong assumptions.



Any **objects** that we wish to attend to can be thought of as **attention targets**. Attention targets can be fixed or static. An example of a **static** target would be the music notation that we need to read. Attention targets can also be moving or **mobile**. An example of a mobile attention target would be how the feeling of muscle tension in our right arm changes as we draw the bow across the string. The sound that we hear when we play would also be a mobile attention target because it changes. To pay attention to a moving target we need to follow the target as it moves and involve our attention with observing some detail of it. Whether your attention target is static or mobile will change the way you need to attend to it.

### **MOVING BETWEEN DIFFERENT ATTENTION TARGETS**

When we change from one object or attention target to another our attention shifts or moves. We say that our attention has switched from one object to another. Usually our attention shifts quite rapidly from one thing to another like from a thought to what we are seeing to what we are hearing.

**What do you see?**



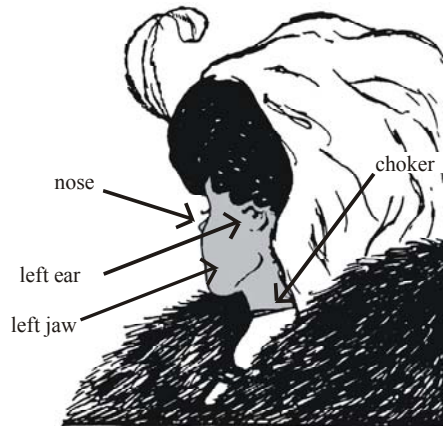
**An Old Woman or A Young Lady?**

Actually it is both.

The picture can be seen 2 different ways depending on how you attend to it.


Usually on looking at this picture for the first time people see either the young lady or the old woman. Sometimes people can see both, but at other times they need some help. Words can help point you to experience the picture in both the different ways. The instructions below will help you to see both the different figures if you are having trouble seeing both of them:

**How to see the young woman :** - first you are looking from slightly behind at her left profile and she has her head turned away to the right. The Old woman's left eye is the young woman's left ear. The old woman's nose is the young woman's cheek and jaw. The young woman's face is shaded in gray below.



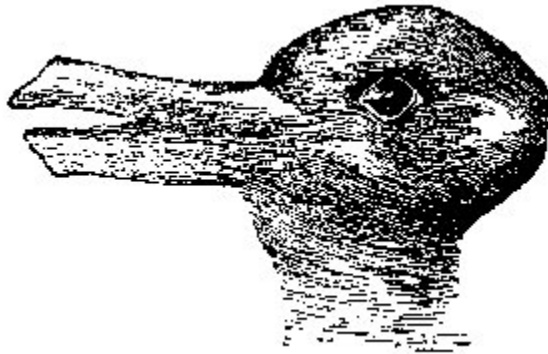
**How to see the old woman :-** The young woman's ear is the old woman's left eye. The young woman's neck tie is the old woman's mouth. The old woman's head is turned slightly towards you. The area below the young woman's neck tie is the old woman's chin. The old woman's face is shaded in gray below.



When you can see both then try to notice what it is like to change or switch attention between them. Can you notice how quickly or slowly your attention shifts? Notice if it speeds up as you practice looking first at one of the figures and then the other? Make a note about how you go with this in your Journal. 

Here is another one to try:

**What do you see ?**



**A Duck or a Rabbit ?**

It is possible to improve the way that we shift attention and it is an important part of learning to direct our attention.


Training our attention means that we try to explore new ways to direct and focus our attention and add these to our habits of attending. We need to try to explore those things that don't draw attention automatically and learn to deliberately check them. Notice the things you are aware of while you are playing and then **notice the things you are not aware of** while you are playing. We should explore moving between things that we have not practiced moving between before. For example moving from attending to our sound, to the feeling of change in the muscle tension as we perform the bow stroke, to attending to whether or not we are standing in a balanced way.

Attention Training is about finding creative ways to engage your attention in a task that you want to do. It is also about learning the means of maintaining that involvement until the task is completed.



## Reflections:

### Task1

Please write a entry in your journal on each of the following questions : 


- What senses do you think you are mostly aware of and why?
- Write out a list of 10 things that would be part of your current external attention environment.
- What are you aware of besides the information you are receiving through your senses?
- Describe one incident where you became aware of something automatically without directing your attention on purpose.
- What senses do you think tell you about how you are playing your instrument?
- Make a list of things from the different attention environments and ask yourself whether it seems to you like you can experience these things at exactly the same moment. Examples below:

1. Something you are seeing and something you are hearing.
2. The feeling of a part of your body and something you are seeing.
3. Something you are thinking about and the feeling of a part of your body.

### Task 2.

This exercise is called an **attention script**, and its purpose is to help you explore and discover more about your experience of being aware and your ability to pay attention. It is also designed to help you reflect on your **experiential knowledge** of how you pay attention and what it is like to pay attention.

**How do you experience your own ability to pay attention?**

You can use this script again and again on different occasions and discover new things about how you pay attention. Read through the following text at your own pace and when you come to a line of dots [ .... ] take some time to really experience and think about what the text is telling you to observe. During this exercise please take time out to write or record things that you have discovered or questions that may have arisen in your journal. 

### **REALIZING THINGS ABOUT YOUR ABILITY TO PAY ATTENTION**

*Without trying to describe it to yourself, just try to fully experience what it is like to be aware, what is the experience of being aware like? .... Next, take some time to follow your awareness and observe where it goes from moment to moment ....*

*Now, think back over what you have just experienced. What kinds of things have you been aware of? .... What kinds of things have you mostly been attending to? ....*

*Do you ever realize what kinds of information you are attending to when you are aware of things? ....*

*Was there any time while you were doing this when you lost track or stopped realizing what you were aware of? .... What happened? ....*

We often want to attend to something, but other things intrude or our awareness gets side tracked and the best way to deal with this is to realize when this has happened as quickly as possible and return our awareness to what we wanted to be doing.

*Next, allow your awareness to go wherever it wants and from time to time try to realize what you are aware of by saying to yourself in your head “now I am aware of ...” and complete the sentence with whatever you are attending to at the moment .... You have just been realizing what you are aware of and making a response by thinking in words. What was it like to experience thinking in words? .... Try it again now and really observe what it is like to experience thinking in words. ....*

A lot of the time when we think to ourselves we think using words in our head. While we are aware of the words we are thinking we are not aware of what we are experiencing around us. When we are playing our instrument this means we are not aware of the feedback we are getting from what we are doing. Often we miss out on fully experiencing what we are doing because we are too busy thinking.

Thinking to ourselves can be important and useful, but we need to know when is the right time to do it. If we should be experiencing what we are doing then we should try to do that and not get distracted by thinking. It is important that we know the difference between experiencing our thoughts and experiencing what we are doing or what is going on around us.

*Next, explore some other kinds of thoughts and how you are aware of them, can you now imagine a big box covered in brown wrapping paper with a red string .... This is a visual or sight thought.... What was it like to experience a sight thought? .... Did you notice how you were aware of the box as you thought it? Can you imagine the sound of a car horn beeping?.... If you could, you just experienced a sound thought.*

*Word thoughts are a form of sound thoughts. What about the smell of a freshly baked cake? .... This would be a smell thought. Have you ever thought about what it would be like to think in smells?*


*Next, try to realize what you are aware of without any thought, either in words or any other kind.... The best way to exclude mental chatter is to become more fully aware of the experience you are having of what is going on around you. Follow your awareness and notice where it goes and explore the experience of what it is like to be aware of different things without allowing any word thoughts in to your mind. Really observe and explore the quality of what it is like to experience something.*

*When you become aware of something, pick the thing that you are experiencing out and try to give it your full attention....*

*Next, notice how long your attention stays on one thing? .... Does your awareness stay on one thing for a long time or is it constantly changing from one thing to another? .... Try to notice how quickly it changes from one thing to another? ....*

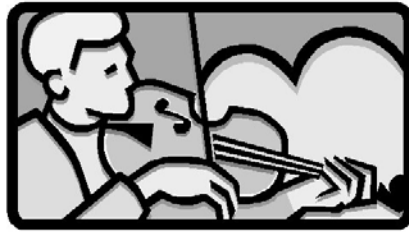
*Is your awareness changing between a large or small number of different things? .... Try to notice the moment in between when your attention shifts or changes from one thing to another ....*

*Next spend some time having a think back over what happened when you did this .... Now try to pick one thing and give that some time and then move on to something else .... Try to give each thing you are aware of the same amount of time .... Does it seem like you are controlling where your awareness goes or does it just seem to move to different things by itself? ....*

*Try to experience what it is like to be aware of all the things you are experiencing at the moment .... Can you do this? Make a comment about this in your journal. Next, try to increase the number of things you are attending to. Start by selecting one thing and become aware of that .... Next pull in another thing and try to experience the two things together .... if you think you can experience those 2 things together then try to add something else .... How many things were you able to attend to at once? Make a note of this in your journal  and perhaps try it on different occasions at different times during the day. Next, try to make your awareness go faster in switching or changing between different things .... What was this like?*

Next time you are playing, try to think about or realize how your attention is functioning within the task. Notice things about your mental state and how well you have set yourself towards and into the task. Notice what you are attending to and ask yourself why? How should you be attending to our playing? What can you do to learn to pay attention to your playing in more effective ways? Notice how good your attentional contact is with the things you are attending to.

# Training Attention for String Players



## Training Papers

### Section 2

#### Using your ability to pay attention in your practice

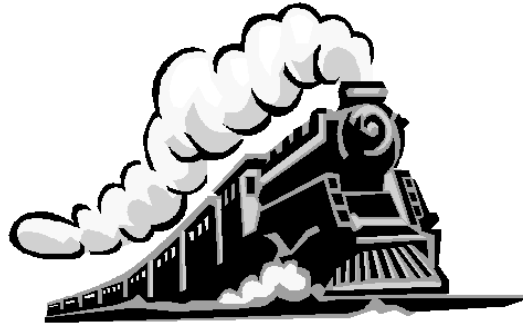
This section will help you to understand what steps you can take and what strategies you can use to approach learning tasks on your instrument more effectively.

When we are learning to improve the way we pay attention in our practice we should realize that it is something to be done piece by piece. Gradually work through each of these elements and suggestions and they will improve the way you practise your instrument.

#### **Getting into a state that helps us to attend - Becoming involved**

We can develop in ourselves an attitude and a composure that helps us to concentrate. In order to do this, we need to learn how to set up the right frame of mind in ourselves, and the first thing we need is intention. **INTENTION** is what we want to do or achieve in a situation. When we have our instrument in our hands and our music on the stand in front of us, we need to work out what we want to do in a practice session. We have to decide **what** we are going to do ie scales, studies or pieces. We also need to decide what skills we are going to work on, like our listening skills or perfecting a particular physical or mental action. This has to do with what **DIRECTION** we are going to take.

If you think about your state in a learning task as being like an old steam train then **intention** is like getting on your train and choosing what track you want to take and where you want to go.



First we need a clear idea about what we want to do. But we also need the desire to pursue it and this is **MOMENTUM**. Momentum is created when we want to achieve something. Momentum is the feeling of “I want to know this”. It is the “forward drive” of interest, inquisitiveness and fascination. But like an accelerator in a car, if we get too much momentum we can lose control or hinder our efforts to engage in a task, so we want just the right amount. In the steam train analogy, creating interest is like lighting the fire under the boiler. This heats up the water that makes the engine go. You have to fire up the engine and get it going and then feed it to maintain momentum and movement. At the same time you have to manage the **direction** the train is going.

Unfortunately, sometimes our train is on the wrong track to begin with and what we need to do is stop, break our current state and redirect ourselves onto the right track that will lead us into a fully engaged, enthusiastic and interested involvement in the task.

When we have more than one intention about what we want to do in a situation this can be a distraction. This happens when we are doing something and we want to be doing something else. Distractions in our practice can include thinking about leisure activities, just feeling tired, not knowing how to do what we need to, and just wanting to get it over and done with. When we are headed in the right **direction** and we have a positive **intention** and some **momentum** happening, we quickly become much more effective in our work.

**Momentum in attending can mean that if we are distracted, we can quickly re-engage in the task and distractions lose their ability to shake us.**

If you do get distracted, don't think about it but immediately set yourself to re-engage with the task. **A distraction only has the power YOU give it.** Just let distractions go and get your momentum back to what you are doing. **Don't focus on distractions.**

When you do this you are developing skills at ignoring distractions and managing your attentional priority queue. Part of our skill at attending is being able to select and prioritise. We need to learn to **only allow one thing to occupy us at a time.** We need to shut out everything else until we have done what we need to do. In order to ignore things we need to **get ourselves to focus more fully on what we need to do.**

Another problem we can have is when we try to pay attention but we have not engaged our interest in the task. We will tend to resist becoming interested in things when we have to **MAKE** ourselves pay attention. It is natural to find ourselves becoming more and more fascinated with things. The skill here is to be able to **GUIDE YOURSELF INTO A STATE THAT HELPS YOU TO PAY ATTENTION.**

If we try to force ourselves to be interested **directly**, we won't succeed as well as if we guide ourselves **indirectly** into an interested state.

One way we can do this is by finding things that are interesting in the task and using them as a **doorway into the task.** If you are really interested in something then by relating that thing to what you need to do you can find **interest bridges.** You need to look out for things that relate to one another between the subjects.

Sometimes we don't understand how to approach a learning task or we decide it is difficult. If we approach every learning situation wanting to **discover something new about how we can learn more effectively** then this is going to help us to make good progress in developing and refining our learning skills. This is an example of an **interest bridge.**

Sometimes we can quickly realize what we need to do and jump straight into it, at other times we should spend more time preparing and building our level of involvement and engagement in what we are doing. Sometimes it is easier to get into a good state for paying attention, at other times we have to work at it and use some strategies to get us there.

### **INSTALLING OR GETTING INTO A HELPFUL STATE**

Sometimes you have to change your current state before you can redirect your attention. This happens when your current state forms a barrier to being involved in the task. When we have thoughts like “I can’t be bothered at the moment” we need to recognise that that is a good place to start to change our state.

We have all experienced states in which we concentrated really well. We can use our knowledge of what we felt like when this happened to help us learn to find these states again. You also need to go back in your mind through how you got into that state.

It is a bit like the story of Hansel and Gretel. The breadcrumbs are your memories of the process of what happened to get you into that state. Learn to reflect on what state you are in and how and why you got there.

*Another way to help open ourselves up  
to a sense of fascination and interest is to STOP,  
and remember a time when you were really curious, fascinated or interested in  
something. What did it feel like to enter that state?  
Maybe a good movie that you just didn’t want to stop watching or maybe a book that  
you found that you just couldn’t put down  
or something else that caused you to  
go into that state.*

When you **feel fascinated** try to notice what it feels like. Try to put yourself back in that situation looking out through your own eyes at what you saw, and re-experience being there. Try to re-enter that situation again inside your mind.



If you remember what it was like when that happened, then you should recall the feeling state you experienced along with the memory. This is using your memories of previous experience to try to recall the feeling of being interested.

Another way to encourage a sense of interest and fascination is by talking to ourselves in our mind in a way that opens up feelings of interest, fascination and inquisitiveness. Thoughts spoken to ourselves inside our head like “Hmmm...that looks interesting” or, “I wonder what would happen if...?” can help us to do this. When you say the hmmm say it with a bell shaped tonality. Raise up high and then lower the pitch as you say it inside your mind. Sounds we make open up different areas of our mind. This sound is connected with interest and fascination and by making it you help to open up that area of your mind.

Notice how other sounds you make to yourself effect what you feel. **HOW** you say things to yourself in your mind is important! If you speak to yourself in a way that is full of genuine excitement, enthusiasm, energy and interest, guess how you are going to start to feel? Also notice how you position your body and how that relates to what you feel.

### **THE INTEREST SCALE**

Here is another exercise that uses a scale to help you think about how you could increase your momentum in what you are doing. You want to make it so you can get the task done and really enjoy the process of doing it.

1. Think about the task you need to do. If you had to rate your current level of interest in doing that task from 1-10 where 10 means “let me at it” and 1 means “not interested, boring” – where would it be?
2. If your interest level is lower than 7, ask yourself what would have to happen to make your interest a 7? What could happen to cause you to experience that level of interest? Don’t go on until you really feel that level of interest.

3. Next think about what would have to happen to make you feel that level 10 or higher excitement and interest in doing the task. What could happen to cause you to feel like that so that you just wanted to jump into the task?
4. Now, when you think about it like that, observe how you feel about it. As you approach the task thinking about it like that, don't you feel more interested?

Changing your state may not be something you may have been aware of before and not something you realised you could do. You may need to practise and rehearse it for a while to learn how to do it.

The point is it is possible to build a state of intense curiosity and fascination inside yourself, which will serve you better in a learning situation than feelings of drudgery or boredom.

### **PROJECTING INTEREST**

You can also transfer these feelings forward into a new learning experience. Next, see yourself in another learning situation or task you are going to be doing. Look out through your own eyes and actually be there, feeling the same way and really enjoying the task as you do it. As you imagine being there in the future, your subconscious mind is being set up to repeat those feelings in that situation.

Once you have got some of the feeling you want, you can make these feelings stronger in a number of ways. The first is by just imagining what it would be like to feel that feeling more strongly. Imagine it starting off really soft and small and then beginning to grow and get stronger and more intense.

You can do these things as a part of a ritual before you do your practice and they will help to open you to the right attitude to approach your learning. It will help you create some initial momentum with your interest. Once you have that you can amplify it by imagining what it would be like to experience that in a stronger way. Learn to recognise this feeling of momentum and control it. Installing and building your state is something you can practice on your own or as part of the way you practice your instrument.

## DETATCHMENT AND INVOLVEMENT

We also need to learn to recognise and evaluate the **QUALITY OF OUR INVOLVEMENT** in a situation.

Many times when listening to a student, I have pointed out that they need to pay closer attention and they discover and correct all kinds of mistakes by themselves. Often when we play we only really have a **shallow or surface level of involvement in the task**. We need to learn to recognise when this happens and learn how to deepen our involvement **with** what we are doing.

We need to have the right balance of involvement in a situation. Too much and we become bogged down in details and loose the broad picture of where we are going. Too little and we are vulnerable to distractions. Getting the right level of involvement can also help us to be in a state where we don't get distracted.

**If our level of involvement in what we are doing is high enough our mind's tendency to be distracted is switched off, suppressed or inhibited.**



This is what happens with stories like the “absent minded” professor who looks unkempt and unshaven - shambling along the street, blissfully unaware of both the traffic screaming to a halt around him and that he is carrying a vacuum cleaner instead of a brief case.

What is happening is that his level of involvement in what he is thinking about means that any awareness of other things is excluded.

We want to be able to create this kind of state but only **when and where it is safe to do so.**

One common state is when we have too much momentum and not enough involvement. For example, the “I just want to get through this” state where we are rushing forward and we only have a shallow level of involvement in the task. This state doesn’t serve us very well.

We can get out of it by increasing our level of involvement and by slowing ourselves down and pacing ourselves better. What we want is the right level of both momentum and involvement.

The next thing we want to do is **increase the speed** at which we can involve ourselves in a task be able to control and manage our level of involvement. This is a set of skills we need to develop.

### **OBSERVING FEEDBACK**

Do you ever find yourself thinking about other things while you are playing? This can often happen and especially when we already know how to play the piece. Maybe we think about what is happening on the weekend or anything else that seems important at the time. The problem with this is that if we don’t observe what we are doing, we cannot identify and fix any problems.

So, one of the important parts of developing attention skills is to **Learn to observe the feedback you are getting about what you are doing as you do it.** Set yourself to observe the feedback you are getting about your playing as you practice. It is amazing how often we actually fail to do this, and we must check from time to time that we are actually doing it.

Often when we play we can make a movement like a shift, bowing action or other kind of movement and we only glance over the sensation and quickly forget what it felt like. We make only a broken or partial observation and there are moments when our attention is deflected to other things. We don’t attend to the feedback that is telling us “hey, this isn’t as in tune as it could be” or “The sound you are making is a bit rough here, can you make a nicer sound?” We need to **LEARN TO EXPERIENCE OUR PLAYING MORE FULLY!**

There are different ways we can do this. We can pick one element of the task and aim to clearly observe that sensation without gaps, breaks or interruptions throughout the full duration of the movement or action. Alternatively, we can choose to observe different elements at different points in the task depending on what it is most appropriate to attend to.

## **UNDERSTANDING AND CONCEPT FORMATION**

What is it like when you don't know much about something? For a start you have little in common with it and little way to relate to it. Often we just do things without really being aware of what exactly we are doing. It is like we learned the movement and promptly forgot about it. For example, reflect on your playing. How well do you know where your right arm is and what it is doing while you are playing a piece of music? If we direct our attention to observe the feedback about that, we often discover that we are not aware of our bowing arm in a whole range of ways.

As we begin to experience our playing in a fuller and more effective way, it provides us with an opportunity to think about those sensations and how they relate to what we are doing in making music. We begin to develop clusters of related knowledge and understandings. This also enables us to begin to think in terms of the sensations we are experiencing and understand how they relate to each other and where they fit in the overall picture of what we do when we play.

If you pay attention to the feelings of muscle sensations in the different parts of your arm, you will first become familiar with what it is like to experience a feeling of muscle sensation. You will then also begin to understand how those feelings relate to the process of creating the sound when you play.

You begin to use the realisation "well I don't really know what is happening there" as a cue that says, "maybe I should explore it and become more aware of it". You notice something is there and suddenly there is all this really interesting stuff for you to find out when you are practising, beyond just playing the music through.

The first step in doing this is to learn to identify the feeling or sensation as an object, which means that you need to make it a clear “something” in your mind. You need to really distinguish it from the other sensations that you are experiencing. Are you really aware of the level of muscle tension in different parts of your arm when you bow? Are you locking up your shoulder or tightening those muscles excessively? There are lots of relevant and important sensations we need to notice and respond to. First, we learn to recognise an object and then we need to attach meanings to it that get recalled to mind. They are **LEARNED RESPONSES**.

Next time you observe a sensation :

1. **experience the sensation (feedback)**
2. **learn to recognise the object.**
3. **learn about the object and associate ideas and meanings with it**
4. **Generalise about it and relate other like objects to it.**
5. **Create a category for it inside your mind.**

### **CRITICAL FACULTY – MAKING JUDGEMENTS**

Another important part of developing attention as a skill is to **learn to make judgements about what the feedback is telling you**. This makes a kind of loop -

**If you aren’t fully getting the feedback then you are unlikely to make a correct judgement!**

**You need to be aware of the feedback-  
and also how to make a judgement about it.**

To make improvements in the way you observe your feedback, **start from the assumption that you are not observing your playing as fully as you could be** and then strive to improve the way you monitor the feedback about your playing.

You then need to observe that feedback clearly and recognise where you should **make corrections** and where you can **discover improvements**. You need to learn to be your own quality inspector.

You need to develop the ability to observe whether the sound you are producing is correct or not. **Your sound is your end product.**

Another thing you should learn to do is to **REFLECT** on the way you are paying attention when you practice and **EVALUATE** it. Ask yourself questions like “How well did I just attend in that task or situation?” “Was there anything I could have done that I didn’t do? Could I have done it more accurately or more efficiently?”

This involves skills at being able to realise what **SHOULD** be occupying your mind at any particular time. You also want to develop a level of self-awareness of what you are doing, and the ability to check that you are actually doing it.

Ask yourself “How is my focus at the moment?” “Am I attending to one appropriate thing?” You can realize when it is appropriate to do this and build these checks into your playing.

### **THE PRINCIPLE OF SENSITIVITY**

When we are sensitive to things we notice them and we become more responsive to them. Not only do we **NOTICE** a sensation because we have learned to, but we also have learned to make **SPECIFIC RESPONSES** to it. So, when we experience these things they affect us more or they bring into our mind a need to respond to them.



The skilled botanist **notices things about a garden as he walks through it that an untrained person will completely fail to notice.** He has developed a **specialised knowledge** that is highly detailed about different plants. He knows when plants have a problem and that may cue in his mind the knowledge of the remedy.

**Specialised knowledge gives us the ability to notice things in a situation or environment and to know what is relevant and important.**

As musicians who play stringed instruments, we want to be able to fine-tune our awareness. We want to experience those sensations that are directly related and relevant to what we are doing. We need to be able to discriminate between the characteristics and qualities of different kinds of sensations to a heightened degree.

We need to map and understand the context in which a certain sensation or object fits. When you think of a cat, you have a concept of general characteristics that would help you to identify a cat rather than something else. If I asked you to think about ten different kinds of cats, you may also be able to do this. This is an example of how we create sets of things, categories and contexts and fit examples into them.

The story is told by a friend of the Mozart family Johann Schachtner how at the age of 7 in 1763, Wolfgang Amadeus Mozart could remember pitches and tell the difference



between pitches that were an eighth of a tone apart. At this age, Mozart's interest was already so great in music and his instruction from his father Leopold Mozart so advanced that he was not only able to remember pitches but also to recognise divisions of pitch down to an eighth of a tone. Here is a quote from Schachtner written to Wolfgang's sister in 1792.

*"You will doubtless remember that I have a very good violin which Wolfgangerl ["Little Wolfgang"] used in old times to call "Butterfiddle", on account of it's soft full tone. One day, soon after you came back from Vienna (early in 1763), he played on it, and could not praise my violin enough; a day or two after, I came to see him again, and found him amusing himself with his own little violin. He said directly: "What is your butterfiddle doing?" and went on playing according to his fancy; he then thought a little and said: "Herr Schachtner, your violin is half a quarter of a tone lower than mine, that is, if it is tuned as it was when I played on it last." I laughed at this, but your father who knew the wonderful ear and memory of the child, begged me to fetch the violin, and see if he was right. I did, and right he was, sure enough!"*




Sometimes we have developed natural sensitivities to things, but we can also learn and train ourselves to become more sensitive to different things. So sensitisation is the **REFINING OF OUR SENSITIVITY TO DIFFERENT RELEVANT SENSATIONS**

So pitch is one element as musicians we need to develop more sensitivity to. We also need to be concerned with time, divisions of time, timing of movements and actions when we are playing our instrument. We need to learn to **TIME OUR MOVEMENTS** so we can attend to them more effectively when we practise. Usually this means slowing down a movement so we can more carefully track the feelings and sensations in our arms that we are feeling as we do it.

Rather than speeding up during the “easy” bits and slowing down for the more difficult parts of the music, we need to learn to choose a tempo at which we can manage to play all the notes correctly at a consistent and moderate pace. At other times we want to practise with a metronome and take the music up to the fastest tempo we can play it and then try and work to increase the speed even more.

Training and practicing for sensitivity is a tool we can use to increase our involvement in what we are doing. We need to explore elements with greater sensitivity when we are practicing.

There are all kinds of examples of heightened sensitivity being connected with skills. In fictional literature there are some good examples, like Sherlock Holmes in Sir Arthur Conan Doyle’s famous novels. What made Sherlock Holmes the “world’s greatest detective” was his ability to distinguish between a variety of relevant details and to see how they related to the ideas that he was developing inside his mind. Can you think of other good examples of sensitivity in different skills? 



## THE PRINCIPLE OF ACCURACY

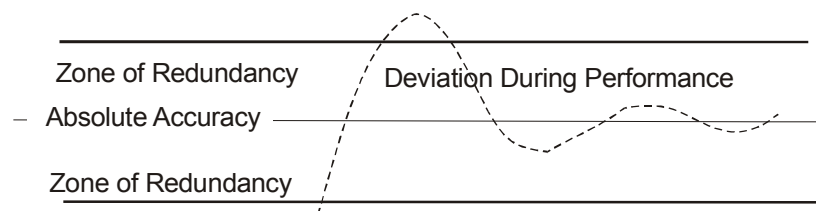
Another area we can improve and apply to different elements of our playing is the idea of accuracy. Make accuracy your personal concern by asking yourself how you can play that part of the music more accurately. Setting yourself increasing standards with regard to what you will accept as being good enough. Always be looking to “push the envelope” with regard to improving your levels of accuracy when you practise. Think of Olympic athletes who are obsessed with being able to strive for and repeat perfect performance every time. An idea that can help you think about accuracy is **THE ZONE**.

### THE ZONE

The zone is a thinking strategy about how you can make what you are doing more accurate. Think of two parallel lines as marking the boundaries of an acceptable performance and a line between as representing best performance.

The first idea is that of **balance** - we keep our action within the two lines marking the boundaries of correct performance. In reality we often wander outside those boundaries. So, the first goal is to get our performance inside the range of correct performance. From there we should try and narrow the deviation of our performance more and more towards the centre line of optimal accuracy.

The reason for this is to create a zone of redundancy around our performance so if we deviate, we can stay within the boundaries. So, the aim is to increase your accuracy to such a level that minor slip-ups are not going to effect your correct performance.



A good example of this is what a tightrope walker does. She has to be so balanced so that if a gust of wind comes along and disturbs her balance, she won't fall off the rope. As long as she stays inside her zone of balance she can still recover from the disturbance and continue her walk.

**Begin by assuming that the element you are going to work on is not as accurate as it could be.**

Aim to develop greater accuracy and narrow your performance down towards the line of absolute accuracy.

### **APPLICATION EXAMPLE**

If you are working on your pitch - start by assuming that your pitch is not as accurate as it could be. Work towards getting it really spot on and taking it to a refined level of accuracy. You would check for the sympathetic vibrations from other strings and the box of the instrument. Work to eliminate any inaccuracy. Always be working towards increasing levels of refinement and accuracy.

You can ask yourself the check questions: how accurate is this? How could I make it more accurate? And how could I place bigger margins of redundancy around what I am doing so it is EVEN MORE accurate. The aim is a higher level of accuracy and refinement in what you are doing.

### **PRINCIPLE OF ECONOMY**

Economy means not doing any more or less than you have to. When we first start to learn an action, typically we give more than is required. We give more muscle tension than necessary in order to try to control a movement because we have not yet learned how much we need. Usually we use less muscle tension as we improve the way we do the movement, but we don't always settle at or discover the **OPTIMAL** level. We also don't learn how to change that level of muscle tension to meet the changing demands of the task at each moment. Sometimes we do too much and at other times we don't do enough.

Recognizing the right level of effort or “give” is important in learning to play our instrument and also in learning to use our mind more effectively. We have to learn how to do the actions in the right way - just the right amount, not too much and not too little. We need to find that position of **BALANCE** and maintain it throughout the action.

### **APPLICATION EXAMPLE**

You can apply this idea to the physical movements of your body when you are playing: How much effort am I making to do this? You should try to make life as easy for yourself as possible while still achieving the result that you want. You need to be able to manage the level of muscle tension so you are not using more energy and effort than you need to.

You can apply this idea to the way you move your left hand fingers. You can check that you keep the left hand supporting the fingers and the fingers lifting and dropping just the right amount. Don't do huge finger movements if they are not necessary; instead keep the fingertips close to the string and work close in to the string.

### **THE SELECTION OF ELEMENTS**

An element is a thing or sensation we can direct our attention to in the learning task. When you are there with your instrument and your music in front of you, you need to make a choice about what you are going to work on. **You also need to make a choice about what you are going to attend to and how you are going to attend to it.**

The main way to decide what to attend to in a situation is **RELEVANCE**, and you can ask yourself “what sensations are most directly related to what I am doing or trying to learn in this situation?” Learn to pick out and explore those sensations that are most relevant to what you are doing. In order to pay attention effectively in a learning task, we need to have a growing awareness of the possibilities of what we could be paying attention to at each moment in the task.

When you are practising, keep in mind that there are 5 broad areas to which you can direct your attention.


- 1) **Your awareness of your body** as it relates to your instrument – ie how you are holding the instrument or relating to the instrument.
- 2) **The sound you are producing** in terms of pitch and sound quality and later in terms of timing, phrasing, articulation etc.
- 3) **Your left hand elements** – your fingering movements, timing and placement.
- 4) **Your right hand elements** – bowing movements – timing and position.
- 5) **The music notation elements** – reading and interpretation.

First you should select one of these broad areas and then select a more specific element in one of these areas.

When you play the same section of the music over and over, try to **vary the way you are paying attention to it**. You can do this by **selecting a different element** to pay attention to. This keeps variety in your practice and helps to maintain your level of interest and involvement.

Below is a list of different elements of the task that you can attend to. Regularly go through this list and see if you can apply each of the different elements in your practice. You should also aim to create and build your own list of elements that you discover for yourself. When you are practicing you need to learn to think about and recognize the elements of your playing in a **DETAILED WAY**.

You should also think about the level of detail at which you will approach the task. **Localisation** means selecting the size of the area you are going to attend to. For example, you could pay attention to the more general feelings and sensations you are getting from the whole of your right arm as you do the action. Moving to another level, you could focus in on the feelings and sensations in the upper arm as you do the action. You could then focus down to becoming aware of the feelings and sensations from a specific muscle in your arm as you do the movement. Alternatively, you could zoom right out and pay attention to the whole feeling of what it is like to make a movement. Experiment with these ideas in your practice and make some notes in your

Journal about what you discover. 

## **LEFT HAND/ARM ELEMENTS**

**Position and movement of the left hand** – Is the position of my left hand going to support and help the movement of my fingers? Where are my wrist and arm and are they relaxed and comfortable?

**Frame and shape of the left hand** - The frame of the hand is the distance between the first and fourth fingers. How and when does this change during the music?

### **The Ridge of the base knuckles**

Am I aware of the tilt and position of the arch shaped ridge of the base knuckles of the fingers? Is it tilted towards me or away from me and how much?

**The balance of the left hand** – You can think of the balance of the left hand as being like that of a basketball spinning on the top of a basketball player's finger. The ball can become unbalanced and fall in any direction.

The left hand can be balanced too far backwards or forwards as well as to the right or left. You can test the position of your left hand by moving it in each direction and find a place where the hand feels most balanced.

Notice how this balance changes in the course of playing a piece of music. Learn to tune into and become sensitive to the feeling of the balance of the left hand. Also notice how this relates to the position of the left hand wrist and the thumb.

**Balance of the left hand over a series of notes** – You need to look for a position of the hand that allows you to play a series of notes before you change position. Try to work out **WHEN** you need to change the position of your hand.

**Work backwards from where you want to get to and think about how to get there.** Try to be aware of the geometry and shape of the left hand in relation to the fingerboard (Shapes to look out for include hooks, arches, and triangles).

**Change in balance of the hand and hand shape during the shift.** Try to maintain the shape of the hand during the shift.

**Position and movement of the left hand fingers:** how high are you lifting your fingers off the string and how high do you need to lift your fingers? Are you aware of the speed of the left hand finger movements and economy of movement in your left hand? Are you aware of what happens to your fingers **AFTER** they have played their notes? Are you mentally and physically anticipating finger movements ahead of when you need to do them? Try to make a mental movie of the order and position of your finger movements in your mind.

Are you aware of the arrangements of the fingers in terms of finger patterns or arrangements of tones and semitones? Are you aware of the timing of the finger and hand movements and where they fit in relation to the beat? What is it like to be aware of the feeling of the space between the fingers? What does it feel like to have two fingers in a tone relationship and how is that different from the feeling of having them in a semitone relationship?

**Muscle Tension** – How aware are you of tension and release or relaxation in the left hand? Are you managing this tension through the course of the left hand movements? Are you aware of whether there is tension in your hand and if you need this?

### **Feeling of Contact between the fingers and the string**

Are you tuned into a feeling of contact between your left hand and the fingerboard? Is there any moment when you lose your sense of contact with the fingerboard? Are you working away from the fingerboard rather than towards it? How close are your left hand fingers to the string and how close should they be? What kind of contact is there between the pad of your finger and the surface of the string? How much weight is there or how much are you pressing the pad of your finger against the string? Are you aware of the kind of contact between the pad of the thumb and the side of the neck of the instrument? What is the minimum amount you can press and still get a good sound? Can you learn to press just this amount all the time? Why would you only want to press the minimum amount? When might this change and why?

**Vibrato** – speed of the vibrato and the width of the vibrato (narrow or wide), the position of the pad of each finger on the string.

**Shifting** – When you are shifting, can you remember what it feels like to make that shift? How sensitive are you to the feeling of the position of the arm and the movement of the arm as you make the shift?

Can you anticipate these sensations in your mind? What does it feel like to move the block of your hand from one position to another? Try to become more aware of the position of your left hand when you are playing and the subtle variations that are involved in that position.

**Accuracy of pitch** – compare the position of the finger to the sound you are hearing and checking whether the pitch is accurate or not.

### **RIGHT HAND ELEMENTS**

Are you aware of the various parts of the right arm and how they move and work together in your bowing? Are you aware of the position of the elbow, wrist, fingers, forearm, upper arm and shoulder during the bowing action? What is the relationship between the position of the elbow and the wrist on your bowing arm in different parts of the bow stroke, is it higher, lower or at the same level? Are you aware of feelings of muscle tension in the different parts of the right arm, where they are at the beginning of the movement and how they change during the course of the movement?

**Awareness of your bow hold and variation in the bow hold** - Are you aware of the perch of your hand and fingers over the stick and how this changes during the bow stroke? Are you aware of the tilt of the hand towards the index finger? Are you aware of the feeling of the bow stick and the frog under the fingers and the feeling of weight being transferred into your hand? Are you aware of the feeling of balance in the bow hand?



**Contact point between the bow hair and the string.** Are you aware of the distance of the bow hair from the bridge? Are you aware of the position of the bow hair against the string relative to the bridge and the fingerboard? (Is it closer to the bridge or further from the bridge?)

Are you aware of the degree of incline of the bow stick towards the fingerboard or back towards the bridge? Are you aware of whether the bow hair is lying flat against the string? Are you aware of whether the bow is parallel to the bridge or at an angle? Are you aware of the position, action and smoothness of the right hand during the bow changes?

**Weight of the arm and it's application to the bow stick** -Are you matching your bowing actions against the quality of the sound you are producing? Are you aware of the feeling of balance and the change in balance of your bow as you move it?

**Over all awareness of your bowing action** -Are you working to develop an awareness of where you are in the bow at any moment in time and how you are using your bow as you play a particular passage? Become aware of whether you are maintaining freedom and ease of movement in the right shoulder.

**Bow Division** - Are you aware of the sections of the bow you are using to play various notes?

**String Crossing** – Anticipate the string crossing by dropping the bow slightly towards the string you are going to before you actually make the movement.

Are you aware of making your string crossings smooth and timing them well rather than doing the string crossing at the last moment in a jerky and uncontrolled way?

**Angle of the bow** – how aware are you of the angle of the bow in relation to the string at any particular moment in the music?

**Speed of the Bow** - Try to be aware of how fast or slow your bow is moving and whether it is speeding up or slowing down. Try to notice whether the speed is constant or varying. Are you aware of the match between the speed of the bow and the application of weight you are making to the bow and how this relates to the sound and response you are getting from the string?

## **Starting your bow strokes**

Are you aware of what it feels like to begin the movement of the bow?

You need to establish the contact and then monitor that initial click as you pull the bow out of the string and start it whirring with the sound. Are you aware of the consistency and continuity of the spin of the string during the bow stroke? Are you aware of the angle at which the bow approaches the string? Are you aware of the distribution of weight onto the bow and how this is balanced on the contact point between the bow hair and the string? You can become more aware of this by slightly tipping of the bow very slightly to the left and the right.

Start the bow stroke from a rested position ON the string. Be aware of the feeling of dragging the bow through the string on the down-bow and the pushing up against the string on the up-bow. Check that you get the right degree of muscular motivation on the up-bow. (violin and viola players especially have to watch out for lazy up bows).

Are you aware of the difference between firm rapidly motivated movements and more smoothly motivated ones? Are you aware of the articulation of the bowing and what is required by the sheet music in this regard? Are you aware of any shapes made in the movement of your arm? Typically these are things like arcs or figure eights. Are you aware of whether you are making smooth flowing movements with your bow as distinct from quick and jerky movements?

## **HEARING AND LISTENING**

**The Sound is the end product when we are playing our instrument.** So developing sensitivity to our sound is vital if we are to improve the way we play.

**Intonation** – Are you aware of the precise pitching of the notes? Are you aware of the presence of sympathetic vibrations in the other strings and the body of the instrument? Are you aware of the presence of consonance and dissonance in the sound? You want to work at developing the ability to be able to tell the difference between tiny changes in pitch.

**The Tone Quality** – sound colour – what kind of sound colour do you want? What kinds of sound colours can you produce?

**Clarity of the sound** – audibility of each note – can I hear this sound as clear and distinct?

**Musicality and Phrasing** – does the sound phrase off towards the end of the series of notes? Is there an over all structure to the broader spans of sound?

**Dynamics** – loud and soft – what is required by the music?

**Beat Awareness** – how the notes are timed and that they fit into a beat?

**Changes in the timing** - speeding up, slowing down or maintaining a constant steady beat.

**Rhythmic subdivisions** - breaking up the beat into appropriate sub units - the smallest rhythmic unit apparent in that section of the music.

**Resonance** – sympathetic and reinforcing frequencies set up in the box of the instrument and the response of those frequencies when the note is exactly in tune.

**Hearing Double Stops** – One thing you can do is to mentally swap between listening to the pitches of double stops. First hearing (selecting) the bottom or lower sounding note and then the top or higher sounding note or whichever note by choice. It is often more easy to get double stops in tune if you follow the lower note with your attention when playing them. You can also try hearing both pitches together at once or as a whole experience or effect.

**Vibrato and hearing the oscillation of the note** - The width of vibrato and the sound of the vibrato.

**Awareness of your surroundings and environment** –the acoustics of the room or building in which you are performing.

**Awareness of other players** and how what you are doing in an ensemble situation fits in with what they are doing.

**Sound quality** – you need to be sensitive to the quality of your sound -The main idea here is one of being able to produce a clear sound when required which is free from blemishes like hitting other strings, notes that shouldn't be heard or scratches.

### **POSTURE AND BODY USE**

**Balance and Weight Transference-** Are you aware of how balance works in your body while you play? We need to be aware of the dynamic interplay of balance between the instrument and the body. This means being aware of the way balance and weight shifts in our body during the performance of the music.

If you play violin or viola, are you aware of how much of the weight of the instrument is shared by your arm and how much by your chin and shoulder rest? When is it better to have more weight being carried by one and when by the other? How aware are you of the sensations that tell you about where the weight and balance is? Are you aware of the transfer of weight off the left hand during the shift or change of position?

Are you aware of the relationship between your head and your neck? Are you aware of the position of your feet and the distribution of weight between them? Are you aware of the angle of the instrument in relation to your body?

You should try to maintain awareness of keeping the length of your torso, so that you are not bending over or hunching over but keeping a relaxed upright position. You should also check from time to time the position of your shoulders and back that they are not slouched forward. You need to position the instrument properly without putting undue stress on your body.

One place to check regularly is to go through the contact points between your body and the instrument. For violin and viola, check your jaw and the chin rest, your collarbone area and the shoulder rest. Check the contact of the left hand with the neck of the instrument and the contact of the right hand with the bow. For Cello or Double Bass how your hand is shaped around and relates to the neck of the instrument. Take some time to set up a sensitive approach to what you are doing.

**Breathing.**- Breathing is important to both the mental and physical parts of your playing. You need to breathe in a natural and easy way and be aware of how this relates to the movements of playing.

### **MUSIC NOTATION.**

The first thing here is to develop your awareness of what the symbols on the page of music stand for. You need to go through the sequence of recognizing the different musical markings like the Key and Time Signatures and checking for changes of clef, key or time signatures through the piece.

There are a number of short cuts you can use. You need to move from just reading individual notes one at a time to beginning to see structures and groups of notes. For example, are the notes are moving by steps or jumps (small or large). You can check whether you have seen a note before and you can also notice repeated notes.

As you get better at reading notes, you also need to develop skills to relate notes to the positions your fingers have to take on the fingerboard.

You can make progress towards this by learning to identify what different intervals or distances between notes look like. How many lines and spaces are between one note and the next? Relate this to how many tone and semitone spaces lie between the fingers on the fingerboard to play those notes.

As your reading skills progress you will learn to see groups of notes in larger and larger units. The movements of notes can be stepwise, leaping or jumping, scale based or arpeggiated. You can learn to recognize and identify different intervals and then convert them to tone and semitone arrangements on your fingerboard. You should also connect the sounds and the finger patterns.

## **MENTAL SELF-AWARENESS**

Your mental self-awareness is your awareness of how you are paying attention in the task. It is being aware of whether you are maintaining an involved and alert state of contact in the task. Are you establishing and building up a momentum and interest? Attention and mental action should, with practice, become something you learn to think about when you are learning a piece of music.

You should direct yourself to learn to observe how you pay attention as a process and as an integrated and coordinated part of the action of playing. First, you must learn to experience your ability to pay attention for yourself. You also need to develop your knowledge of how this works in different situations. Learn to reflect on how you used your ability to pay attention in different parts of the learning task and ask whether you could improve that.

## **COMBINING AND RELATING ELEMENTS**

You need to be able to compare and relate different elements to one another. One example of this would be to examine the feedback you are getting about moving your arm and linking it with the sound you are hearing so you can adjust your playing. You also should try to set up broader levels of awareness of different areas of the task. This means being versatile in the way you apply your attention.

These are all skills in managing your attention. Sometimes you need to be focussing on a specific detail and at other times you want to be comparing a number of elements and creating larger compounds of awareness.

Recognising what the priority is in a particular situation is a skill that comes with reflection and practice. While we are playing, it is usually most relevant to be paying attention to our sound. We also need to be aware of the sensations we are getting from the movement as we play.

You can't be paying attention to everything so how do you do it? **You need to pay attention to one element at a time.** You have to pay attention to something until you can do it to a certain level and then you go to the other thing. You drop it, leave it and come back to it later on and then take it up to the next level. So you are progressively using your ability to pay attention to improve the way you are doing things in different ways.


You need to develop the ability to match and compare the sensations with the movement and then with the sound. You then need to work to create a very vivid and clear internal model of what it is like to make the movements so you can recall it in ACCURATE detail. You can then rehearse this by recalling these sensations to memory. This is the foundation for mental rehearsal in the absence of your instrument. Mental rehearsal depends on the detail with which we can remember the sensations of what the actual experience is like.

### **THE APPLICATION OF PRINCIPLES TO ELEMENTS**

Another way you can work with the elements in your practice is to combine them with the principles of sensitivity, accuracy and economy. Select a principle and one element to work on. An example of this might be selecting accuracy and pitch so you are going to pay attention to the sound and work to increase the accuracy of your pitch.

### **DEVELOPING SCRIPTS AND ATTENTIONAL PRACTICE SEQUENCES**

Now, you are in a practice room by yourself. You need to learn how to make your own script to cue your focus onto the various musical elements and use the principles.

In creating a script you can plan a sequence of attentional action inside your mind or if you are not confident in doing this you can plot it out on paper. Do an example script in your Journal for a piece you are learning at the moment. 

If you are basing it on a piece of music, look at the music and ask yourself about how you need to pay attention to it. A script in this case might look something like this if you were to write it out:

1. bring the bow and the right hand and arm to the string
2. check the contact between the bow hair against the string
3. take a moment to tune into your breathing
4. anticipate the feeling in the arm of that initial pull or push of the bow  
(depending on whether you are starting up bow or down bow)
5. begin the bow stroke while maintaining awareness of the balance of the bow.

And so on...

It is important to ask yourself if you have missed any steps, and writing out the script can help you to recognise this.

You can use a script to tune yourself in to the task. Begin by selecting detailed elements that will increase your sensitivity and help you examine the specifics of the task. You can also use questions in scripts to cue your attention onto a specific element.

You should also be aware of timing in your scripts. At first you should start with scripts that just include different elements one after the other. As you get better you can start to include reference to specific timing as you move your attention between different elements. By doing these things you will be training yourself to think about how your attention moves. It will also help you choreograph or map your attentional movements.

### **DISCOVER THE TASK**

Learning to make corrections on your own without the teacher means learning to notice things about the way you are playing. This is the process of learning to become your own teacher, and it means learning to discover your own faults and work out how to make your own corrections.



This section of the paper has given you the foundations for learning how to explore your instrumental practice. Perseverance is required to learn these skills, but as with any set of skills they become easier as you practise them. What these skills should do is to set up a context for you in which it is possible to discover new things about your playing.

You also want to work at developing your ability to notice new things and relationships. Part of making our practice an adventure is learning to explore and notice things we have previously ignored. The following is a story about just such a process of discovery:

### **A Fishy Tale** **Louis Agassiz and the Art of Observation**



The Famous Naturalist, Professor Louis Agassiz had a talent for teaching his students observation. One of his students Samuel Scudder recorded his experiences of how Professor Agassiz taught him observation. Samuel had just enrolled at the University and turned up in the laboratory of Professor Agassiz for his class in Zoology. Professor Agassiz took a large jar of specimens from the shelf preserved in yellow alcohol. He removed a fish from the Jar and placed it in front of Samuel in a tray. "Take this fish", he said "and look at it; we call it a haemulon" (pronounced hay-mu-lon) "In a while I will ask you what you have seen."

With that Professor Agassiz left Samuel with strict instructions to care for the specimen entrusted to him. Professor Agassiz told Samuel to keep the fish before him in the tin tray and to occasionally moisten the surface with alcohol from the jar, taking care to replace the cork stopper tightly. Samuel felt somewhat disappointed and to him it seemed that gazing at a fish did not seem like a worthwhile use of time. And besides that the smell of the preserving alcohol was particularly unpleasant. After ten minutes Samuel felt he had seen all there was to see of the fish and went to find Professor Agassiz, who had, however left the Museum.

When Samuel returned his specimen had dried out and he dashed alcohol frantically over the fish in order to return it to its normal sloppy appearance. Having done this, he once again sat down to return his gaze to his mute companion. " Half an hour passed - an hour - another hour; the fish began to look loathsome. I turned it over and around; looked at it in the face - ghastly; from behind, beneath, above, sideways, at a three-quarters' view-just as ghastly.

I was in despair" after some more time he gave up on the fish and carefully returning the fish to the jar and replacing the cork stopper he went for some lunch.

On his return he learned from his fellow students that Professor Agassiz had been at the museum, but had again left and would not return for several hours. Samuel again removed the hideous fish from the jar and with a feeling of desperation began to look at it again. He pushed his fingers down its throat to feel how sharp its teeth were, and began to count its scales until he was convinced that this was nonsense. The idea then struck him that it may help to draw the fish. As he attempted this he was pleased to discover that he now began to observe new features of the creature. Professor Agassiz returned and said, "That is right, a pencil is one of the best of eyes. I am glad to notice, too, that you keep your specimen wet, and your bottle corked". With these words of encouragement he asked Samuel "Well, what is it like?"

The professor listened as Samuel explained the features of the fish that he had been able to observe: The fringed gill-arches, the pores of the head, fleshy lips and lidless eyes; the lateral line, the spiny fins and forked tail. When he finished the Professor waited a while as though expecting him to say more, and then said disappointedly: "You have not looked very carefully; why, you haven't even seen one of the most conspicuous features of the creature, which is before your eyes as plainly as the fish itself, look again, look again!"

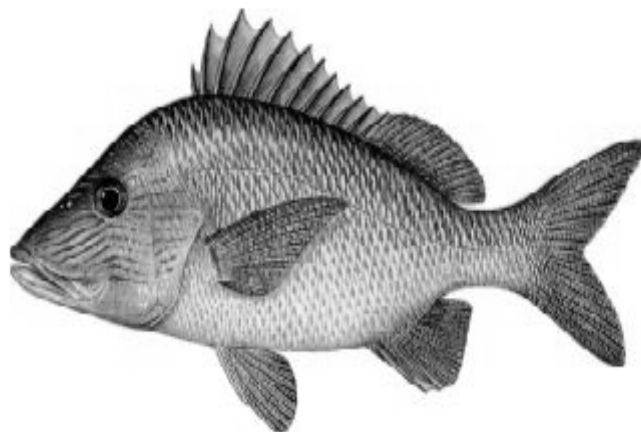
Samuel was disappointed after all the time that he had spent looking at the fish, but with a new resolve he set himself to discover more about the creature. As the afternoon progressed he found that he was able to discover one new thing after another and saw just how true Professor Agassiz's criticism had been. The afternoon progressed and towards its end the Professor asked, " do you see it yet?" "No" Samuel replied, "I am certain I do not, but I do see how little I saw before ... ..

That is next best, but I won't hear you now; put away your fish and go home; perhaps you will be ready with a better answer in the morning. I will examine you before you look at the fish."

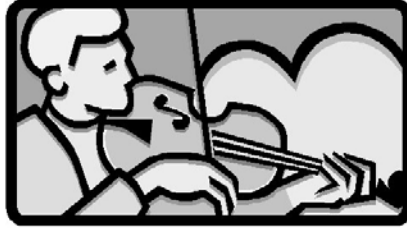
Samuel found this disconcerting as he thought to himself, "Not only must I think of the fish all night, studying, without having it before me, what this unknown but most visible feature might be; but also, without reviewing my new discoveries, I must give an exact account of them the next day". Samuel walked home in an anxious state of mind as he considered his problem.

The next morning he was greeted happily by the professor which he found reassuring. He realized that Professor Agassiz was concerned that he should see for himself what he saw. "Do you perhaps mean that the fish has symmetrical sides with paired organs?" The professor's thoroughly pleased "Of course! of course!" repaid the wakeful hours of the previous night.

After a time Samuel ventured to ask the professor what he should do next. "Oh, keep looking at your fish!" was the Professor's reply. Just over an hour later Professor Agassiz returned to hear Samuel's new observations. "that is good, that is good!" he repeated, "but that is not all; go on". For 3 more days Samuel studied that fish with Professor Agassiz exhorting him to keep looking and discovering new things about it. On the fourth day Professor Agassiz placed a different Haemulon beside the first and asked Samuel to point out the differences between the two. Another Haemulon was added and so forth until a whole group of the creatures was reviewed and explored.



## Training Attention for String Players



Training Papers

### Section 3

*“One can only see what one observes, and one observes only things which are already in the mind.”*

**-ALPHONSE BERTILLON**

### Developing your Imagination Skills

Our ability to use mental images in our thoughts is called imagination. When we imagine, we recall things or creatively form mental images in our mind. Mental images can be images of meaning as well as images of objects and sensations. We can imagine in any of the mediums of information we can receive through the senses. Different terms are often used to describe what happens when we experience mental images such as seeing something again in your mind's eye or in your **imagination**

Everyone experiences mental images of one kind or another as part of their usual thoughts and memories. If we can experience something then we can remember and recall that experience and imagine it. As an example, try to remember something you experienced recently, maybe what you had for breakfast this morning.

A memory that we recall may be made up of several mental images in different mediums of information. Imagine being at the beach. In your imagination you may be able to see and hear the waves washing against the shore. You may imagine the smell of the salty sea air and feel the warm sand under your feet and the sun on your skin.

We can even imagine things that we have never experienced or that are not real by combining things we know inside our minds. Imagine for example a creature that has the head of an elephant and the behind of a horse.

In order to imagine, we need to learn to pay attention to our experience of the mental images we create inside our minds. In this section we focus on how we can work in the internal attention environment of our imagination.

### **DIFFERENT KINDS OF MENTAL IMAGES**

When we recall something that has happened in the past, we say that we remember it. We recall the **memory trace** and experience it again. When we do this we are aware of **mental imagery**. We experience mental imagery when we dream or when our mind wanders. These kinds of mental imagery are more or less spontaneous, that is, we just seem to drift into them.

We can become deeply involved in these images and they can be quite vivid. In this sense they involve a natural engagement of our attention. Sometimes, when we have heard a piece of music over and over, we get a tune in our head. We experience a very vivid form of sound imagery called **echoic imagery**. It can be difficult to dismiss the song from our minds. These kinds of images do not require effort to recall and we experience them spontaneously and they involve little intention.

Another kind of imagining that we can do is to deliberately use mental images in our thoughts. One of the most common kinds of mental imagery that takes place is when we say things in our minds. This is word based or **verbal thought**. For example say in your mind without any vocalization the words “I drew my bow across the string” Notice how you experience thinking a verbal thought.

One of the most powerful learning skills you can develop is the ability to **use your imagination as a tool in your learning**. Most students have never been taught how to use their imagination as a tool in their learning and have not developed skills in doing this.

If you were asked to imagine the fingerboard of your instrument, how detailed is the image? Can you imagine it in a way that is like your experience of the real thing? If we are not used to imagining we can find it difficult to become aware of a mental picture. Training our imaginations as string players involves learning to think in the mediums of music.

Mental imagery can be a very effective tool in our learning and thinking. We cannot imagine something without paying attention to it. Imagining and attending are different mental processes that work together just as is attention is connected to being aware of what goes on around us.

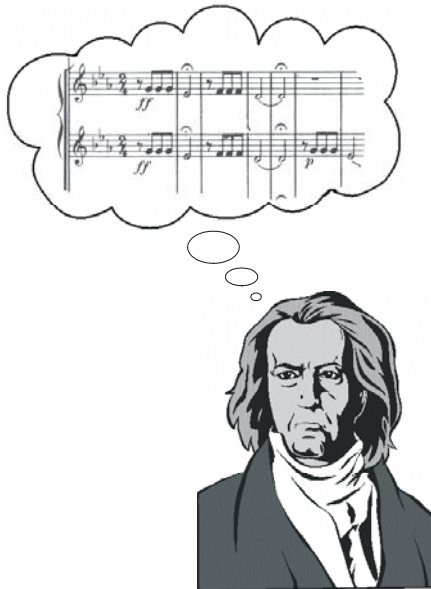
## **EXPERIENCING YOUR MENTAL IMAGERY**

### **What is it like to experience a mental image?**

If I ask you what is the colour of the door of your house you will probably have to go inside your mind and experience a mental image before you can come out with an answer. When you do this, ask yourself the question “what was it like to experience the mental image?” The purpose of this question is not to give yourself an answer in words, but rather to observe the quality of the experience.

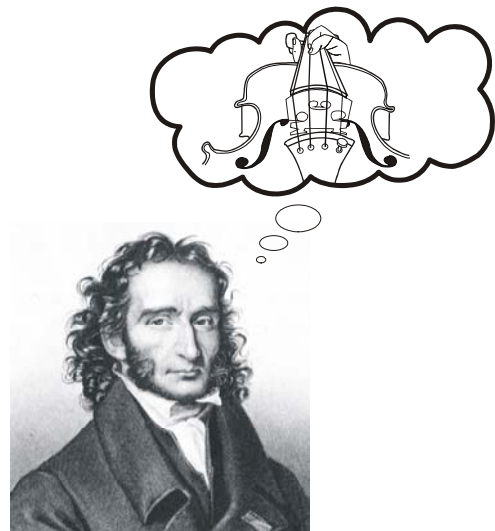
Sometimes it can help us to start imagining something that is easy to imagine so we tune ourselves into what it is like to experience a mental image. For example, if you imagine walking through your house, you could walk into a room where you see your music on the stand and your instrument sitting in its case. You could then imagine walking in and picking it up.

### **SKILLED IMAGINATIONS**



Although students are not usually taught to use their imaginations as a tool in their learning, most musicians who achieve greatness also have well-developed imaginations. There are many examples of the importance of a trained imagination among string players and other great musicians. Beethoven composed seven of his symphonies inside his imagination because he became deaf.

Some string players have learned to use their imaginations to enhance their skills and learning. Niccolò Paganini, one of the greatest violin players of all time, became so good at practicing his instrument inside his imagination that he was able to significantly reduce the amount of time he practiced with his instrument. The key is the ability to work with detail in your imagination.



Using our imagination we can learn to practice in our heads with our mental instrument. To do this well takes some time in terms of rehearsal, practice and training. You can start developing these skills and knowing how to use your attention to do this will help you too. Whenever you have odd moments, you can retreat into your internal practice room.

### **TRAINING YOURSELF TO IMAGINE**

Sometimes when we start practicing using our imagination we can't sustain our involvement. We may only be able to see still images at first, and later we learn to see moving images. Our images may be black and white and after some practice we may be able to imagine in realistic colour. Patience and determination are required for us to develop effective imaginations.

We can also use words to cue us into imagery. Here is an example: "whatever you do, don't see a cream filled chocolate cake inside your mind right **NOW!** This is an example of how our mind can respond to a temptation challenge.

### **AFTER IMAGING TECHNIQUE**


Often, when you close your eyes or turn your head suddenly, an image of what you were just looking at persists for a moment or two and then fades. This is an **afterimage**. After images can be very useful in developing our imagination.

**After imaging technique** involves trying to maintain awareness of this after image for as long as possible by maintaining your attention on it. When the image fades try once again to see the afterimage. When the image is fading, shut your eyes. You will see the black background, but instead, keep your awareness on the afterimage of what you were just looking at.



You want to get to the stage where you know not only what it is like to experience a mental image but also what it is like to deliberately cause that experience to happen inside your mind. It can help if you imagine in as many sensory mediums as possible.

### **PHYSICAL CUES TO EXPERIENCING YOUR IMAGERY**

One of the ways you can help yourself to imagine is to look upwards as you do it. Looking up is something that usually happens when you remember or imagine visually. Usually with right handed people, when they look up and to the left they are accessing a memory of something they have seen before. When they look up and to the right they are imagining something they have never seen or have to construct. Where do you find it easiest to look when you imagine?  Find out what works best for you and look in the direction where it is easiest to access your visual mental imagery. When you do this you are lining up your body movements with your imagination.

### **PRACTICING WITH BASIC OBJECTS – IMAGINATION EXERCISES**

Can you imagine a white square on a black background? Next swap them over so you are picturing a black square on a white background. Next change the square into a triangle. Work with both the number of objects ie increase the number to 3 and then add in different colours.

You can make up your own little imagination exercises like this by seeing **OBJECTS** in your imagination and placing them in **POSITIONS** and giving them **QUALITIES** like colour or texture. You can also make compound objects by combining groups of smaller objects and then placing them in locations and in relationship to one another. The two most powerful things about our imagination is our ability to make imaginary things and to place them in imaginary positions inside our minds.

## **QUALITIES OF MENTAL IMAGES.**

The important qualities of images are **vividness** and **accuracy**. **VIVIDNESS** refers to how much experiencing the mental image is like experiencing the real thing. This is our indicator of how well we are able to involve ourselves in experiencing our mental imagery. It takes practice to be able to really engage in attending to a mental picture or other sensory image. **ACCURACY** is whether the details of our mental image match the details of the external object. The qualities of vividness and accuracy apply to all the qualities of the object we are imagining.

## **CHECKING VIVIDNESS**

When we first try to imagine something we can experience difficulty. The images may seem vague or fleeting rather than vivid and lifelike. Especially where we have never learned to deliberately use our imagination. It takes practice to be able to link into our imagination and imagine in a way that is lifelike and realistic.

There are different qualities to look for in your image, for example, colour. Ask yourself whether the colour is bright or pale. Can you describe it to yourself? Note, there is a difference between mentally experiencing something and describing it to yourself using word imagery. What we are after is a mental experience of the object – not words.

## **ACCURACY AND INTERNALISING IMAGERY**

**Internalization** is the process of forming accurate memories of external objects and sensations. It is making a memory model of an external object. For example, what does a centimeter look like on your fingerboard when you look down your fingerboard with your instrument in playing position? How accurate is your perception of this? Is your idea of the distance between the fingers correct? We need to notice what is lacking in the mental image and pay attention to the actual object again to fill in the details. We need to check that each part of the object is accurate in our mental image.

## **ACCURACY AND MATCHING EXERCISES**

One way we can build the accuracy of our internal representations of objects is by doing matching exercises. Once we have made any corrections, we then go back to working with our mental model again.

## **CHECKING OUR IMAGERY**

A good way to check the accuracy of our mental imagery is to draw things from memory or, with music, to be able to sing the pitches that we have in our mind. This is called **externalizing**.

For example, we can externalize humming the pitch of a sound - imagine A440Hz and then try and hum the note you are imagining. Next, you should match or check it against the correct sound using a tuning fork or piano.

Often, when there is no way we can externalize our imagery, we need to rely on our own judgment of the accuracy of our performance.

## **WHAT IS A MENTAL MODEL**

In order to imagine your playing movements accurately you need to develop a mental model of your instrument and your body and be able to combine these two models together and work out how they interact. **A mental model refers to our experience of an internal representation of the object in our mind.** As you start to work with your mental model you may find blank spots in your knowledge. For example, you may not be able to imagine where your arm is when you perform a part of the bowing action. You might then need to practice playing it and observe the action carefully while you do it.

Working in your mind with a mental model is not the same as playing on your instrument. However, having a model of your fingers and fingerboard inside your mind is very useful to work out where you are going to put your fingers down. The big advantage of working with a mental model of your fingerboard inside your mind is that it also helps you internalize your fingerings and form a concept of your fingering in your mind.

You can also form a mental model of your bow and your bowing. You can work out where you are going to be in the bow, how much bow to use on each note and the kind of weight you want to use. You can work out whether a note will be bowed with an up-bow or a down-bow before you come to play it on your instrument.

Work towards making internal representations in your memory of the external things you work with when you play. You can make the internal representations as detailed as the real object. You can also work at becoming familiar with these objects so that they become tools in your thinking.

### **DEVELOPING A WORKSHOP INSIDE YOUR MIND**

You can develop a mental space or workshop inside your mind where you work with your mental tools and skills. As well as imagining the objects of playing inside your mind, you can also go inside and imagine working in a special place, a **mental practice room**.

In spare moments when we can involve ourselves fully in thought, we can go in our imagination to this place and work on developing our skills. This space can also take various forms in your imagination from a practice room or a performance space like a hall with it's own acoustic properties.

## **WAYS OF OBSERVING MENTAL IMAGES**

In your mental “work space” you can also work with the actions you are creating with your mental tools. You can work within your mind as though you are viewing a movie. In fact, you can think of it as becoming the director in your own mental production. You can freeze-frame and view just a static image on your mental screen. You can view a storyboard of these images that map out the sequence of a movement.

A movie director can select what perspective you will see the action from. You can also do this when you are working in your imagination. Make it as interesting as you want. You can slow the action down and imagine it at half speed or even in step-by-step progression in your mind. This will really help you to clarify the course of the movement. Learn to observe the way things change as they move. Start with some short simple movement sequences. Learn to step into your mental practice room and experience these things mentally in your mind.

### **PERSPECTIVE**

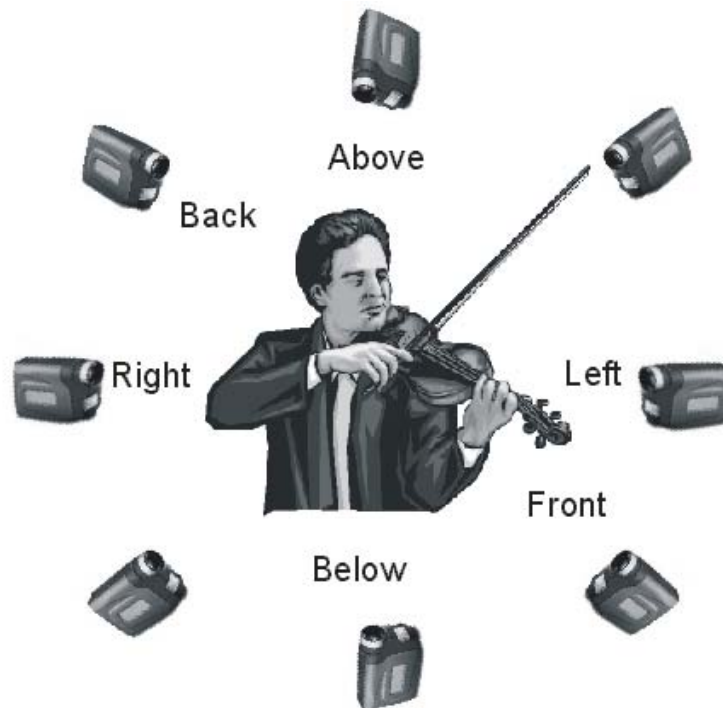
When you are looking at the action, just like with a camera, you can pick the perspective from which you are going to view the movement or action. You have a number of options to create variety and interest. It is as though you have your own internal cinema.

#### **PLAYER’S PERSPECTIVE**

Player’s perspective is where you imagine what it is like to see your playing as you would usually see it - looking out through your own eyes down the fingerboard as you play. The advantage of viewing your work from this perspective is that it will relate most directly to what you actually do when you are playing.

## EXTERNAL PERSPECTIVE

External perspective is where you imagine what it is like to see your playing as you would if you were standing outside yourself and looking at yourself play. The external perspective gives you a lot more options and possibilities. The diagram below gives you just some of the ideas. You can view your playing not only from any direction but also from any distance:



You can see yourself watching your hands as you play a sequence of notes on your mental fingerboard from directly above. You may need to actually look at your hand from this position before you can internalise this image. Remember, you want an accurate mental image.

Imagine a sequence of moving action where you move in slowly or quickly towards the action as you do it on your mental instrument. As you do this, your mental image of the detail should grow large and fill your mental screen. Can you imagine this movement? How lifelike is it? How strong is your focus on this movement? Is it continuous or only now and again. In time and with practice you will become very good at this kind of imagery.

In your mind you can adjust the speed of the action or the speed at which you change the perspective or position you are viewing the action from. You can pan or zoom (depending on the speed) in and see the action close up and then pan out again. Imagine the action from being in the position of an ant on your fingerboard. Imagine how huge your fingers would look. You can also change the proportion of your image by making the image large (expansion) or small (diminution).

As a practice example, picture yourself holding your instrument ready to play. Pan up from the bottom to the left and then across the top and back down to the right. Combine different perspectives and sequences of perspectives when you do your mental work. Then try and do the whole thing from your perspective as the player.

Working like this will make you much more aware of the phases of action and movement and position of things when you play. You will ask yourself questions like: “how do you want this or that to be?” You will find that you can experiment and try some things out inside your head.

You can use mental rehearsal techniques like this to improve the speed and accuracy of physical responses. As you imagine increasing the speed of what you are doing, you can begin to work towards making the action happen more rapidly. It is your mind after all that guides your fingers. You should also work at developing your awareness of the beginning of the action and the timing and fluency of your movements.

## **MENTAL MODELS**

When developing your mental models, you should start by building a basic framework or scaffolding and then you fill out the details as you go. First, develop some smaller models like one of your fingerboard and your hand and how they interact. There are lots of elements, details and sections even to these models. You can then join them together to form larger mental models. Next, you can apply these models to the whole action of playing the music.

## **MUSIC NOTATION**

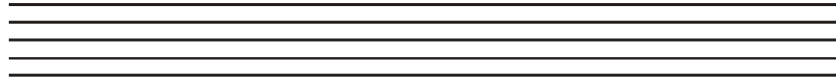
Imagining the music notation starts with your ability to imagine the stave. Picture in front of you a white sheet of paper. See the whiteness of the page and the quality of the texture of the paper.

Once you think you are imagining a white sheet of paper then add a long black horizontal line. See the blackness of the ink and see the line being of various thicknesses. Next, add another line. See the two lines and how far apart they are from each other. Add another line and then another until you have a stave on your white sheet of paper and you can clearly see all five lines.

Ask yourself questions that point you to observe the details of your mental image like “how thick are the lines of the stave and how far apart are they from each other?” You could zoom in and out on the stave so it becomes larger and fills your mental screen and then as it recedes it becomes smaller as you withdraw the page of manuscript away from yourself.



Another way to learn to imagine the stave is to use the afterimage technique. Look at the stave below and then either look away or shut your eyes and try to hold the afterimage.



Next try visualizing different notes and notational markings and then adding them to your imaginary stave. Practice imagining time signatures, crotchets, quavers and so on, first by themselves and then on the stave with other notational markings. Picture in your mind a crotchet in different positions on your imaginary stave. Then groups of notes: 2, 3, 4 and so on in different kinds of step wise and leaping progressions.

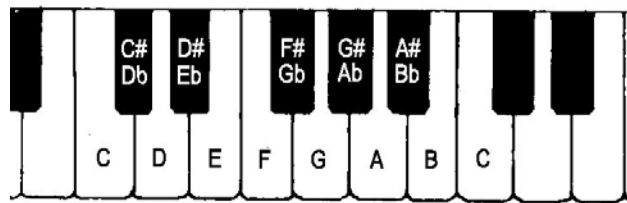
Imagine seeing scales as they would appear on the notation if you had them in front of you. Imagine different and gradually more complex rhythmical and notational figures. Gradually imagine larger chunks and groupings of notes. If you practice exercises like these regularly, it won't be long before you find you are good at imagining music notation.

Another way to develop skills at accurately imagining music notation is to try to visually memorise the music you are learning using the after imaging technique described earlier. Grab a piece of music you are learning and sit down with it in front of you and look at the notation then close your eyes and try and imagine it. Spend some time working with the image, keeping as many details before your attention as possible. After a time, check back with the music notation again and see what you didn't have in your image.

When you are doing this exercise, observe not just the notes but things about the qualities of the sensation you are observing. Observe the blackness of the print, the texture and colour of the paper. After you have visually memorised a section of the music, get a sheet of blank manuscript and write it out from memory. Then check the details with the original music and see if there were any gaps in your image.

Do you know what the different intervals look like when you see them on the staff? Can you look at a piece of music on manuscript and point out all the fourths of various kinds, and sixths or sevenths? Notice how many lines and spaces there are between two different notes in different kinds of interval spacings. It is an important skill to be able to visually recognise intervals and by working with different intervals in your imagination in different positions on the staff you can become good at this quite quickly.

Another way of visually working out intervals is by having a mental model of the piano keyboard and its layout inside your imagination. This has the advantage over stave notation in that it shows the natural semitones between B–C and E–F.



Always check and match for accuracy. You want your internal mental model to mirror the object in all important and relevant details so that it is vivid and lifelike in your imagination. When you work with your mental model it needs to become more and more like working with the actual objects or things.

## **SOUND**

When we talk about a mental model of sounds we are talking about the ability to mentally “hear” or imagine the sound of a pitch in our head. Usually it takes some time to develop this skill, but it can be developed with practice. The first thing you need to do is to start to remember the sound of a pitch and then check it against a sound source like a piano, electronic keyboard or a tuning fork.

A good starting pitch for string players to remember is A440 Hz, which is the orchestra tuning pitch. After this you also need to develop the ability to work out the pitch of other notes in your head from the sound of A440Hz by interval.

Another aspect of your mental model of sound should be the ability to imagine the sound of different timbres. Take the sound of the violin, the sound of a voice, the sound of a trumpet and so on. Also, for a string player, being able to accurately imagine the different sound qualities of the different strings. At a refined level you should be able to imagine subtly different sound qualities made by playing the same note in different ways.

Gradually you also want to learn to be able to imagine chords or the pitch of different notes sounding together at the same time. This ability comes from listening to the overall effect of the sound of the notes as they sound together rather than singling out the notes individually.

## **RHYTHM, BEAT AND TIMING**

This is an awareness of how timing relates to playing the music. Just as you can develop an awareness of pitch, you can also develop an internal mental model and awareness of tempo or the speeds of the beat. A good place to start is to remember the tempo of a beat at 60 beats per minute.

Another skill in this mental model is to be able to maintain a steady beat while you are playing the music rather than speeding up or slowing down.

You also want to be able to change gears in terms of your divisions of the beat. That is to switch from counting in crotchets into quavers and then into semiquavers and then to minims and so on. You can develop the ability to model cross rhythms in your mind like 3 against 2 or 4 against 3.

Awareness of the beat and divisions of the beat are important for string players. In modeling timing it is important for students to be aware of how the physical movements of their body relate to the timing of the music.

Working out the rhythm is important. This means being able to identify mentally where the beats fall and how the different rhythmic units fit into the beats. Our knowledge and ability to read rhythms is another important part of our mental model of music notation. We can learn to recognize and understand different rhythmic units and how to play or perform them.

### **THE FINGERBOARD AND LEFT HAND MOVEMENTS**

The model of the left hand fingerboard is mainly about awareness of touch, movement the positions of the fingers during the action. You can check the positions of your fingers and learn to measure distances by sight, but the visual sensations and sensations of touch need to be closely integrated.

This model requires you to know the positions of notes on the fingerboard. You need learn the different finger patterns built up on a particular note in different positions on your instrument. Lots of other elements come into play in this model, like the position and balance of your left hand being supportive of your finger work. You need to know the fingerboard of your instrument both visually and by touch and position.

You can use your imagination in this process by imagining the instrument fingerboard and the arrangement of fingers on it from different perspectives. When you are working out the fingering for a passage of music you can create a mental video of this as though you were filming the sequence of your finger movements. You can also explore and evaluate different fingering possibilities.

The **FINGERBOARD GRIDS** appended to this section can be useful guides in this regard. They are ways of making a map of the positions of the notes on the fingerboard. They need to be matched to your actual experience of playing the correct notes in the right positions on your fingerboard. One way to learn this map is by learning the bands of notes across the 4 strings in the different positions. For example, the notes across the strings from the E to the G-string in first position on the violin are F# B E and A.

We can use our mental model of the left hand and finger movements and the fingerboard to work out sequences of left hand finger movements or choreography on our fingerboard. By developing these models you should get to the stage where you can work out the best fingering for a passage of music in your head.

Your model should include a detailed understanding of elements like the movement and action of the fingers. You can find out what that feels like. You need to be sensitive to weight application, touch and the way the fingers depress the string onto the fingerboard. You need to be tuned into and aware of feelings of balance that relate to the position of your left hand in relation to the fingerboard. The balance of the hand in relation to the fingerboard changes according to the requirements of the fingering. You need to develop and refine your awareness of the frame of the left hand and how the hand is balanced during the course of a passage.




Finger patterns vary between the different stringed instruments. One constant however is the idea of the range of the hand or distance between the first and fourth fingers and the block or configuration of the hand and fingers within that frame. Good systems of fingering are based on this idea and it provides a good foundation for thinking about the fingering on your instrument.

When the notes won't fit within the frame of reference of the hand we need to extend or shift the hand. Important ideas in shifting are that you should shift onto a strong beat. If you can shift over the distance of a semitone as well then that is preferable. It is also important that you are aware that you shift in a smooth and measured way, not too quickly. You also need to closely observe the sensations you experience in your arm and hand when you shift.

Fingering with the left hand also needs to be referenced to the sound colour and producing and maintaining the desired quality of sound. There are a number of systems for notating finger patterns, but the best thing you can do is get your mental models to the stage where you can work through the fingering in your mind.

When you develop a more subtle awareness of the feelings that relate to moving your fingers, you can also use your imagination skills to work to increase the speed of the movement of the fingers. Clarifying your conception of the sequence of movement and the feelings that relate to the movements can help you gain more security in your playing.

You can also use your imagination to help you practice tension control. The ability to manage tension and relaxation issues in the left hand can be vital to correct performance. Music that requires dynamic left hand work can result in increases in muscular tension levels in the left hand. You need to manage this by working out in your imagination moments when you can release tension in the hand.

You can improve the music you have already learned to some degree by recognizing subtle aspects such as the shape and movements of the hand. Can you describe any more aspects of your left hand fingering that you discover as you work with some of these ideas in your practice? 

## **RIGHT HAND AND BOWING**

One of the practical applications of the mental model of bowing is to be able to work out bow directions for a piece or passage of music. This means you should develop the ability to work out what part of the bow you need to be in at the start each bow stroke. You also need to know what direction the bow needs to go. You need to be able to picture your bow in your mind, either looking out through your eyes or standing outside yourself and see the whole bow going in different directions.

You should know where you are in the bow at any point during the stroke. This will allow you to mentally work out considerations like whether the bowing works out for a passage and whether it makes sense to start up-bow or down-bow. This requires the ability to imagine and rehearse the directions of the bow. Decide which notes will be an up-bow and which notes a down-bow. You need to apply the rules of bowing such as when and where to slur notes together and in what circumstances. Learning about bow division and allocation is an art in itself!

The down beat or first beat of the bar usually gets a down-bow. In an Anacrusis, which is where you have a single note before a bar line it will usually be up-bow. To be able to do this you need to be able to think of where you will be in the bow and how much bowing different notes will require. You can use a mental model of your bowing to solve these kinds of bowing problems.

You can learn to imagine the feel of your bow in your hand and what the weight of the bow feels like when you hold it in your hand. To be able to do this you need to develop sensitivity to the sensations of touch between your hand and the bow. It is important to incorporate into your mental model things like how it feels to hold the bow when you have it in a horizontal position or a vertical position and what it feels like to place the bow on the string. Be aware of **WEIGHT**, **BALANCE** and **POSITION** and the quality of **CONTACT** between your bow hair and the string.

Notice the **ANGLE** of approach of the bow to the string. Is the bow hair evenly positioned between the strings or is it tipped more towards one string or the other? Try to anticipate a string crossing by tipping the bow towards the string you are going to before you make the string crossing. Include in your mental model the position of the bow stick and whether it is slanted out towards the scroll or back towards the bridge. When the stick is tilted out slightly so that it matches the incline of the string it enables the bow hair to sit flat against the string and provides maximum surface contact between the bow hair and the string.

Be aware of the parts of your arm and how they work together smoothly through the movement of bowing a particular passage. The path of the movement needs to be examined both for economy and for the best possible production of sound. You should as a string player always work towards the quality of the sound that you produce.

In your mental model build up mental videos (including mediums of sight as well as feelings of movement and touch) of how you place your bow on the string. Imagine through the start of your bowing sequence. Lifting the bow to the string and placing your bow on the string and settling the weight into the string. Use your model to imagine the initiation of the pulling action and that initial release of the bow hair as you begin to move the bow. You need to pay particular attention to this and how it happens. Notice whether you release to the surface of the string or to the center of the string or release only slightly and maintain a deep contact of the bow hair in the string.



To include tone production into your mental model, you need to be aware of the sensation of the weight resting on the bow stick. You need to work out how this relates to the depth of contact or position of the bow in the string and the speed at which you draw the bow. You can also include in your mental model the evenness and consistency of the spin or whirl of the sound. We can use our mental model to realize new aspects of our bowing that we haven't thought about before.

Explore the movement of your arm in detail. Visualize where the different parts of your arm are at any stage in the action and be aware of subtly different sensations in the arm and how they change as the position of the arm moves. Ask yourself questions like: "is my elbow above or below my wrist?" "What is the path my arm takes during a sequence of bowing actions?" "Where are my shoulder, upper arm, elbow, forearm, wrist, hand, finger joints, and finger pads and how do they move in the bowing action?"

### **PRACTICING ATTENTION SCRIPTS INSIDE YOUR MIND**

When you are practicing imagining through the action you are clarifying to yourself what you will need to attend to when you are actually doing the task. This can also help you to discover if there are gaps in your knowledge of the process of doing the action. The mental rehearsal of an action can also be used to help us think about how we will direct attention in the task. Below is an example of a mental rehearsal script for bowing. You can develop your own scripts like this to practice different elements of the task in your imagination. A good script will tune you into becoming aware of the elements you wish to rehearse when you are practicing a passage of music.

### **EXAMPLE - BOWING ATTENTION SCRIPT**

You should imagine your way through a whole sequence of bowing the music. Start with how you are going to lift the bow up to the string and how you will prepare the bow stroke. Rest the weight of the bow on the string and prepare to begin the bow movement.

*Start by learning to imagine your bow. How long is your bow?*

*Can you picture your bow in your mind? Examine that bow in your mind in all complete detail.*

*Can you feel the weight of your bow as you pick it up with your fingers and hold it in your hand? Really become sensitive to this feeling of weight and how it changes as you move the bow? To check this, observe what happens next time you hold your real bow.*

*Can you feel the points at which the bow contacts the surface of your fingers? What is the quality of the sensation there like?*

*Next, picture yourself bringing your bow to one of the strings and placing and resting it on the string. Try to sense the balance and distribution of the weight and notice how this changes.*

*Next, try to feel what it is like as you prepare to begin the bow stroke. How does the weight and movement of your right arm feel as you begin to pull the bow?*

*How does it feel to release the weight of the bow on the string slightly as you begin to move it? How does the string respond? Did you produce a clean start to the note? Do you maintain an even weight through your hand on to the bow stick throughout the stroke?*

*Imagine looking down the instrument as you would from your usual playing perspective. What does the bow look like as you draw it across the string? Can you see whether you are drawing the bow straight or not? Can you see the bow and feel it in your imagination resting on the string. Can you see the bridge and the fingerboard and where the bow hair rests on the string relative to these?*

*How do you complete the bow stroke? What kind of follow through is required?*

## **WHOLE BODY MODEL**

String Players need to be very aware of how their body relates to their instrument. It is particularly important to develop an awareness of your back and arms. You need to become aware of muscle tension in your back and the relationship between your head and your neck while you are playing. Many violin and viola players slump forward or don't hold their instrument in a horizontal position. Many cello players don't maintain a vertical uprightness and lengthening of their head, neck and torso.


If you encounter soreness in your back, around your shoulders or arms this is your body's warning signal that you are unduly straining your body. Your mental imaging of your playing should include an awareness of tension in your body and in other areas such as around the shoulders or your legs.

## **COMBINING AND INTEGRATING MODELS**

After some rehearsal you may get to the stage where you can integrate your mental models into larger models that reflect a broader awareness of different areas of your playing. You will be able to apply these to specific pieces of music or technical exercises that you are learning.

You can make a mental picture of how your left hand choreography (the sequence and timing and order of the movement of your left hand fingers) relates to the movement of your bow. This ability to simulate playing a whole section of music inside your mind is a more advanced kind of mental modeling that you can work towards.

## **LEARNING TO DEVELOP SCRIPTS**

Scripts can be developed out of details you identify and then learn to observe. This involves being more aware of the details of what you are doing. Practice writing out your own scripts that involve becoming more aware of different elements of your playing. Pick two elements and write out two scripts that help you refine your awareness of those elements in your Journal. 

## **THE MENTAL PRACTICE SESSION**

First you can create and run through an awareness script to sensitise yourself to your memories of the different aspects of your playing. You can imagine through particular problems or sequences of bowing action or left hand fingerboard choreography that you need to work out.

## **EXAMPLE MENTAL PRACTICE SCRIPT**

*In your imagination, step into your mental practice area.*

*Picture your instrument in your case. Picture the latches in your mind and your hands moving to open the latches. Open the case and see the colour of your instrument – the lining of the case – ask yourself questions about the details. Evaluate your experience – how vivid is your image of these things?*

*In your mind, pick up your instrument and feel the weight of it as you lift it to your shoulder - how accurate do you think your image of the feeling of weight is? Next time you have your instrument out check this.*

*Lift your bow out of the case – imagine tightening the nut and the weight and feeling of the bow as you hold it in your hand – what does the bow stick feel like? -Observe your experience of this.*

*Picture yourself looking at your instrument as it appears in front of you when you are playing it. What can you imagine? Can you see the matt surface of the top of the fingerboard?*

*Can you imagine the widths of the different strings and the exact spacing in between them?*

*Do you know what your instrument looks like from this perspective?*

*Have a look at the bridge .... the colour of the bridge .... how wide the bridge looks from your vantage point or perspective.*

*What parts can you see? – examine the lengths and distances. Can you imagine putting your hand up to touch the instrument? – can you imagine the feeling as the surface of your fingers touch the neck of the instrument? What other details can you observe?*

***Continue this script with other elements you might go on to observe....*** 

It may not seem immediately significant that you remember these details, but what it is doing is building a more vivid and lifelike mental representation of the experience of playing. Each new thing you observe and remember is like a hook you are placing in your mind to hang the experience of your playing on. Try some of these exercises out and give yourself some time to do some mental practice as well as practicing with your instrument.

**I would like to thank you for spending your valuable time to trial these training papers.**

**I hope that they have given you a lot of ideas to work on.**

**By learning to pay attention more effectively in every aspect of your playing you should become much more effective in your practice.**

**Best wishes**

**Matthew Cohn.**

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# Conventional list of left hand positions on the Violin

	G	D	A	E	
Half Position	G $\sharp$ / A $\flat$	D $\sharp$ / E $\flat$	A $\sharp$ / B $\flat$	F	
1st Position	A	E	B	F $\sharp$ / G $\flat$	
Low 2nd Position	A $\sharp$ / B $\flat$	F	C	G	
2nd Position	B	F $\sharp$ / G $\flat$	C $\sharp$ / D $\flat$	G $\sharp$ / A $\flat$	
3rd Position	C	G	D	A	Lower 3rd Harmonic
High 3rd Position	C $\sharp$ / D $\flat$	G $\sharp$ / A $\flat$	D $\sharp$ / E $\flat$	A $\sharp$ / B $\flat$	
4th Position	D	A	E	B	The Break
Low 5th Position	D $\sharp$ / E $\flat$	A $\sharp$ / B $\flat$	F	C	
5th Position	E	B	F $\sharp$ / G $\flat$	C $\sharp$ / D $\flat$	
6th Position	F	C	G	D	
High 6th Position	F $\sharp$ / G $\flat$	C $\sharp$ / D $\flat$	G $\sharp$ / A $\flat$	D $\sharp$ / E $\flat$	
7th Position	G	D	A	E	Half String Harmonic
Low 8th Position	G $\sharp$ / A $\flat$	D $\sharp$ / E $\flat$	A $\sharp$ / B $\flat$	F	
8th Position	A	E	B	F $\sharp$ / G $\flat$	
Low 9th Position	A $\sharp$ / B $\flat$	F	C	G	
9th Position	B	F $\sharp$ / G $\flat$	C $\sharp$ / D $\flat$	G $\sharp$ / A $\flat$	
10th Position	C	G	D	A	
High 10th Position	C $\sharp$ / D $\flat$	G $\sharp$ / A $\flat$	D $\sharp$ / E $\flat$	A $\sharp$ / B $\flat$	
11th Position	D	A	E	B	
	D $\sharp$ / E $\flat$	A $\sharp$ / B $\flat$	F	C	Low 12th Position
	E	B	F $\sharp$ / G $\flat$	C $\sharp$ / D $\flat$	12th Position
	F	C	G	D	Low 13th Position
	F $\sharp$ / G $\flat$	C $\sharp$ / D $\flat$	G $\sharp$ / A $\flat$	D $\sharp$ / E $\flat$	13th Position
	G	D	A	E	14th Position Upper 3rd Harmonic
				F	Low 15th Position
				F $\sharp$ / G $\flat$	15th Position
				G	Low 16th Position
				G $\sharp$ / A $\flat$	16th Position
				A	End of the Fingerboard
				A $\sharp$ / B $\flat$	
				B	
				C	

# Conventional list of left hand positions on the Viola

	C	G	D	A	
Half Position	C# / Db	G# / Ab	D# / Eb	A# / Bb	
1st Position	D	A	E	B	
Low 2nd Position	D# / Eb	A# / Bb	F	C	
2nd Position	E	B	F# / Gb	C# / Db	
3rd Position	F	C	G	D	Lower 3rd Harmonic
High 3rd Position	F# / Gb	C# / Db	G# / Ab	D# / Eb	
4th Position	G	D	A	E	The Break
Low 5th Position	G# / Ab	D# / Eb	A# / Bb	F	
5th Position	A	E	B	F# / Gb	
Low 6th Position	A# / Bb	F	C	G	
6th Position	B	F# / Gb	C# / Db	G# / Ab	
7th Position	C	G	D	A	Half String Harmonic
	C# / Db	G# / Ab	D# / Eb	A# / Bb	Low 8th Position
	D	A	E	B	8th Position
	D# / Eb	A# / Bb	F	C	Low 9th Position
	E	B	F# / Gb	C# / Db	9th Position
	F	C	G	D	10th Position
	F# / Gb	C# / Db	G# / Ab	D# / Eb	High 10th Position
				E	11th Position
				F	12th Position
				F# / Gb	High 12th Position
				G	13th Position
				G# / Ab	High 13th Position
				A	14th Position Upper 3rd Harmonic
				A# / Bb	High 14th Position
				B	15th Position
				C	16th Position
				C# / Db	High 16th Position
				D	17th Position
				D# / Eb	High 17th Position
				E	18th Position
				F	
				F# / Gb	
				G	
				G# / Ab	
				A	

End of the Fingerboard



## Conventional list of left hand positions on the Cello

Diagram illustrating the fretboard positions for the C, G, D, and A strings, showing the relationship between the string name, the fret number, and the resulting note name. The diagram is organized into a grid with columns for the strings (C, G, D, A) and rows for the frets (1 to 24). The fret numbers are indicated on the left side of the grid.

	C	G	D	A
Half Position	C $\sharp$ D $\flat$	G $\sharp$ A $\flat$	D $\sharp$ E $\flat$	A $\sharp$ B $\flat$
1st Position	D	A	E	B
Low 2nd Position	D $\sharp$ E $\flat$	A $\sharp$ B $\flat$	F	C
2nd Position	E	B	F $\sharp$ G $\flat$	C $\sharp$ D $\flat$
3rd Position	F	C	G	D
Raised 3rd Position	F $\sharp$ G $\flat$	C $\sharp$ D $\flat$	G $\sharp$ A $\flat$	D $\sharp$ E $\flat$
4th Position	G	D	A	E
5th Position	G $\sharp$ A $\flat$	D $\sharp$ E $\flat$	A $\sharp$ B $\flat$	F
Raised 5th Position	A	E	B	F $\sharp$ G $\flat$
6th Position	A $\sharp$ B $\flat$	F	C	G
Raised 6th Position	B	F $\sharp$ G $\flat$	C $\sharp$ D $\flat$	G $\sharp$ A $\flat$
7th Position (1st Thumb Position)	C	G	D	A
Low 2nd Thumb Position	C $\sharp$ D $\flat$	G $\sharp$ A $\flat$	D $\sharp$ E $\flat$	A $\sharp$ B $\flat$
2nd Thumb Position	D	A	E	B
	D $\sharp$ E $\flat$	A $\sharp$ B $\flat$	F	C
	E	B	F $\sharp$ G $\flat$	C $\sharp$ D $\flat$
	F	C	G	D
				D $\sharp$ E $\flat$
				E
				F
				F $\sharp$ G $\flat$
				G
				G $\sharp$ A $\flat$
Upper 3rd Harmonic				A
				A $\sharp$ B $\flat$
				B
				C
				C $\sharp$ D $\flat$
				D
				D $\sharp$ E $\flat$
				E
				F
				F $\sharp$ G $\flat$
				G

Labels on the right side of the diagram:

- Lower 3rd Harmonic
- The Break/Saddle
- Half String Harmonic
- 3rd Thumb Position
- Raised 3rd Thumb Position
- 4th Thumb Position
- Raised 4th Thumb Position
- 5th Thumb Position
- 6th Thumb Position
- Raised 6th Thumb Position
- 7th Thumb Position
- Raised 7th Thumb Position
- 8th Thumb Position
- Raised 8th Thumb Position
- 9th Thumb Position
- End of the Fingerboard

## **APPENDIX D:**

### **Response Summaries**

## **Student A – Response Summary**

### **Pre-training interview**

#### **Practice situation prior to the training.**

Student A practices as regularly as she can, but school and other commitments interfere. She tries to practice every day and to maintain a practice routine. She usually practices for about an hour in the afternoon or evening depending on when she gets home from school. She practices in her room unless it is really hot when she moves to the lounge. When her arm gets sore she might have a ten-minute break. She either practices a number of things, or just one thing, either pieces or scales. She usually practices alone, but if her mother is listening she may comment. No one makes her practice, but her mother will occasionally remind her.

#### **Student's attitude to practice prior to the training.**

Student A practices to improve and to make lessons worthwhile for herself and her teacher. She can express herself through the music and enjoys working without interruptions. She gains a sense of satisfaction and achievement from practising, enjoying pieces when they sound good. She finds practice frustrating or boring if she is just repeating the same thing. Without lessons she runs out of ideas. She is uncertain whether she is good at practicing – she has not thought about that before and ponders, “*compared to what?*” When asked about improving her practice, she suggests she could “*probably pay a little more attention*”. She is asked how important it is to pay attention and she answers very important: “*if you just go through it and*

*you don't pay any attention then you will just think 'oh, that sounded good enough' and you will leave it, so you have got to pay more attention or you are not really going to improve a lot".*

### **Student's approach to practice prior to the training**

Student A feels she knows how to practice. She gets tips from her teacher, which she follows as she can. When learning a new piece she tries to sight read as much as possible. When she hits difficulties she stops and repeats the part she can play. After that she works slowly on the more difficult section. To avoid frustration she tends to defer problems. She either attempts these later or takes them to her lesson. Sometimes, she realises she is playing incorrectly she will attend more carefully. Sometimes, she begins paying attention well but this deteriorates as she tires or if her mood is unhelpful. Her mind wanders occasionally. She feels that to be confident playing music you have to learn it thoroughly – there is always something to improve.

Student A becomes aware of muscle tension when she knows the music better and can then loosen up more. She has not really considered how she listens to her sound. She tries to listen and, if it sounds really bad, she tries to improve it. She has a medium level of awareness of her arms, knees and body position, but really only pays attention when the sound quality deteriorates. Pain also lets her know when she has not been aware of her arms, back and shoulders. She says she has a medium level of awareness of her fingers and relates that to intonation. When she knows a piece, she is not very aware of the printed music, only using it for reference.

### **Student's understanding of mental imagery and attention prior to the training**

Student A understands what it means to practice in her head and considers herself good at picturing things and “*role playing things*”. She thinks about fingering occasionally. Her pictures are like experiencing the actual thing. She thinks in both words and pictures. To pay attention means to focus on something without distraction. She feels it is important to know how to pay attention. She thinks she is good at paying attention because others have told her so. No one has really taught her how to pay attention – she has taught herself. She thinks that initially it requires a lot of attention to learn something new. In primary school she used to experience attention gaps but now it happens less frequently.

### **The pre-training practice session**

Student A plays pieces in the first practice session. On crossing to the C string she is dipping the scroll of her viola. There seems to be noticeable rigidity in her left shoulder where she rests the instrument. She makes slight intermittent errors and sometimes repeats a section to correct them. She repeats difficult sections and practices them more slowly. Student A has previously learnt this music and is making improvements. As the session proceeds, the most noticeable issue is her discomfort holding the instrument, causing her to stop to relieve tension.

### **The training**

#### **Section one**

Student A started by overviewing the training papers. Her initial journal comment is that “*this could be useful, I’m sometimes easily distracted, so the whole thing about*

*paying attention applies to me rather well*". In response to the question about the importance of timing in attending (page 3) she says that it allows us to take in particular details, and if we are not paying attention at the right time we could miss something important. In response to the second journal question (page 8), Student A feels that she is always focussing on something, while she may pay very slight attention to other things going on around her.

When reading and writing her attention is momentarily focussed on the sounds outside her room, however this is only briefly and that she still has some attention on what she is doing and she is not overly distracted. She continues, commenting that she is mostly aware of sight, sound and smell. Her next comment is that it is weird to think about being aware. When her mind wanders she loses awareness of her surroundings. She usually thinks in words but finds it difficult to describe.

Experiencing a visual thought can be weird, particularly something not in memory. She will construct the visual thought in the sequence the verbal description came – like colouring in. It is easy to hear a car horn beeping in her imagination because it is very familiar. Her ability to recall smells is not as strong. Smells have the greatest effect on her memory and recounts recognising a perfume she experienced ten years before.

It takes a conscious effort not to think in words. Her mood is a determining factor in whether she can clear her mind and observe her environment. She has to make an effort to keep her attention focussed on one thing for any length of time. She finds thinking about her own attending, distracts her from focussing. She then comments

that if something new attracts attention, her senses pick it up before she puts any thought into it. She is often able to focus on several things at a time, but not nearly as well as just a few things. Her attention tends to dart from one place to another, always with great speed.

She next discusses her practice. When she is confident and knows the music, she can attend to other things (hands, sound and posture) without much difficulty. Where she knows the music less well her attention focuses on either hand and she loses awareness of her posture. Later she notes that she finds it much easier to work on her technique when she is not looking at the music - perhaps she should try to memorise her pieces. Where she knows the music less well she still needs it for bowings and dynamics. She occasionally notices that her mind tends to wander and she daydreams, but as this is nothing unusual she can refocus.

## **Section two**

Working on applying the ideas from section 2 she notices the balance of her left hand and the tension level in her forearm. She has found a more comfortable way of having her left hand when playing in higher positions. She then switches to focussing on developing smoother bow direction changes. She noticed that keeping her arm higher over the bow aids smoothness, but the tension in her left arm has increased because she has been paying less attention to it.

She focuses on the economy of her left hand and notes that she finds controlling the position of her fourth finger extremely difficult. It requires a conscious effort to keep it close to the string. She concludes that she is trying too hard because the tension in

her left hand and forearm is building. Later, focussing on the sound being produced, she pays attention to her bow speed, pressure and position. Overall, she feels it is rather satisfactory.

### **Section three**

Later, she comments that having done some practice; all of the things she thinks of have already been mentioned, like remembering the feeling of the balance of the hand, amount of muscle tension and the feel of a shift. She can imagine all the listed images for the bow almost perfectly, however not simultaneously. She guesses that this is because she does not always pay attention to everything at once when she plays. She lists her script, which is fairly accurate and detailed. She notes the idea of economy in holding the instrument feeling the weight of the neck of the instrument and trying to use only as much force as is required to keep it in position. She also notes sensitivity to the pressure of her left hand fingers as she places them on the fingerboard. She attends to the position and balance of her left hand over the fingerboard, that her muscles are not overly tight and that her fingers are close to the string. She notes that she is synchronising the movements of her hands.

### **Post-training interview**

#### **What the student thought about the training**

Student A thought the training was useful and relevant, providing a few new strategies and rounding out many she had heard from her teacher previously. When asked what she learned, she says “ *I learnt more about the way in which I pay attention because I*



*paid attention to the way I pay attention and how my mind tends to wander every once and a while... Yeah so I learnt more about myself in that ... and I am learning to cope with that now.* She wants to follow up all of the ideas and finds it all interesting and useful, especially the imaginary practice room. She felt that the written comments were too repetitive and that section three dragged a little.

### **Attitude to practice**

Student A had no difficulty applying the training apart from lack of time. She has always wanted to improve her practicing and feels she has changed by paying more attention to what she is doing and thinking about while practicing, although this makes it less enjoyable for her. The training has given her additional thought processes to apply in her practice. She could definitely improve the way she practices and acknowledges the importance of paying attention. She notes that she can sometimes play on “*automatic pilot*”, which she tries to avoid because then she has to repeat things, which is wasteful.

### **How the student approaches their practice**

Student A feels she knows how to practice but this is impeded by tiredness or laziness. She feels the training papers apply to post initial learning. She tries to sight-read the music before dealing with it in any detail. She often moves to something that needs work, which often causes distraction. She tries to refine a piece after learning it. Sometimes she gets frustrated about how the music sounds which she will try to overcome by practicing. She isolates problems to fix the sound. Since the training, she thinks more about the way she pays attention when she practices, but that it

depends on what she is attempting. She catches her mind when it wanders but not when it just goes blank. She has not practiced in her head very often and cannot attend to everything at once.

### **Mental imagery and student's understanding of attention**

Student A thinks she understands what it means to imagine music. She has thought about this more since the training. Her visualisations are more or less detailed. She feels she has a pretty strong imagination. She has a slightly better idea of how to pay attention more effectively. How she attends depends on what she is focusing on, although she does tend to zone out occasionally. She admits that it takes a lot of attention to learn something.

### **The post-training practice session**

Student A starts her pieces slowly with some faulty intonation, as she is new to the notes. She is also stopping and repeating sections. She ignores a wrong note on several attempts and then corrects it and proceeds. She has problems with coordinating the bow and left hand when crossing to the C string. She stops and attempts this again more successfully. She continues to have intonation problems but is more concerned with finishing. Later when playing particularly difficult chords, she produces a particularly unsatisfactory sound and is heard to utter "yuck" A second attempt is also unsuccessful and after saying "alright" she continues. Tension is becoming an issue and she stops several times to relieve this.

## **Student B.**

### **Response Summary**

#### **Pre-training interview**

##### **Practice situation prior to the training.**

Student B practices irregularly once every two to four days depending on his homework, how busy he is and his priorities. He usually practices for thirty or forty minutes in the lounge room and normally divides the practice session with a break. The content depends on the number of pieces and their length. He is generally busy after school and tends to practice later in the evening and sometimes on the weekend. How he feels depends on his prior activity: *“If I have had a tiring day, I will usually be quite tired by the end of it”*. His mother is usually around, often in the adjoining kitchen and she reminds him to practice.

##### **Student’s attitude to practice prior to the training**

Student B says that he practices to get better but does not enjoy it: *but you have to do it so*”. He prefers playing pieces he knows – new ones are much harder to start. He finds practice occasionally boring, depending on his level of interest. His major difficulty is procrastination. Surprisingly, he acknowledges that he improves with regular practice. He does not consider himself good at practicing. He has trouble starting and dislikes scales. More motivation and routine could help: *“I am not very good with routines, just generally”*. He deems attention quite important: *“if I have got other things on my mind it makes it a lot harder too”*.

### **Student's approach to practice prior to the training.**

Student B thinks that he partly knows how to practice. When learning a new piece he starts from the top and sees how far he can get. If he makes a mistake he repeats the section and then proceeds until he hits the next problem. When learning a new skill he will repeat it until it “happens”. If he dislikes a piece he gives it less attention. If he has a lot of trouble with a piece he will take it to his teacher. He usually plays at a comfortable speed – *you have to have played the music through a lot of times before you can say you know it*. He says no one has really told him how to practice. His teacher writes things to practice or discusses specific techniques. He will think about getting difficult sections right but otherwise does not think a lot while practicing.

He considers mental practice a bit harder – he can do it but only does it occasionally. He uses it to consider the harder bits and their fingering. He will move his fingers and practice the fingering. He has not really thought about or noticed how tight his muscles are when playing. He considers himself “all right” at listening to his sound. He is pretty aware of how his arms move when playing and focuses on what he is doing if there is a difficult shift or bowing pattern. He can become aware of the tightness in his shoulders if he is nervous, anxious or not relaxed. He experiences pain if he is holding his bow incorrectly. In learning a new piece he reads from the music, then memorises it, but retains the music for reference. He generally performs from memory.

### **Student's understanding of mental imagery and attention prior to the training.**

Student B thinks he can imagine music if he is used to doing it. He is good at seeing pictures in his mind but better at imagining sounds. His pictures seem real, but it depends on whether he is remembering or imagining creatively and he might miss some detail. He generally thinks in words. He thinks he can imagine bowing the string to produce a sound. He understands attention to mean focussing on what you are doing which involves trying to give it your full attention. He thinks it is important to pay attention to do well at something. His level of attention depends on his interest – various things capture his interest, but he does not elaborate. He has never been taught to pay attention – “*no, it's just a skill*” which not everyone possesses. He considers that the amount of attention required to learn something new depends on its difficulty, but generally it requires a lot. Generally he remembers what he has just been reading unless uninterested. He does notice gaps when he has not been attending.

### **The pre-training practice session**

Student B stops a large number of times and goes back over things. The first piece seems particularly difficult. He works on sections then stops to check the music before trying again. No real continuity is established. The first section is characterised by stopping and starting and trying groups of notes over and then proceeding when they are satisfactory. Occasionally he corrects things but it seems a little haphazard. The second piece has more continuity. He does not stop to correct his intonation. His left hand navigation seems insecure especially beyond first position. Besides some

other errors and muddling through different sections he manages to get through the pieces.

## **The training**

### **Section one**

Student B's first journal comment relates to the timing of attention: "*The timing of the way we pay attention is important – we need to focus on the right things at the right time*". Regarding focus and attention he states: "*When attending in a broad way, I was not thinking about anything in particular, however I was more aware of what was happening around me. When attending in a focused way, I was only focused on one thing at a time and the other things were blocked out*". His next entry deals with experiencing two or more things simultaneously: "*I think that I hear and see at the same time. To focus on what I am hearing, or to pay particular attention on what I am seeing, my attention then jumps from them and back again in quick succession*". Concerning the section on attention sets he comments, "*This shows that we can easily switch our attention.*" In response to the exercises with the Old Woman or the Young Lady he says "*As I got used to switching between the two views, I was able to change between them quickly*".

He then reaches the Reflection tasks at the end of the first section. He is mostly aware of the sense that he is concentrating on: "*That is, if I am trying to listen carefully to a sound, I am mostly aware of my sense of hearing. - I am aware of what I am thinking of, which doesn't necessarily have to be imported through senses. When I was looking*

*at some of the pictures in the Training Papers, I saw the different view without directing my attention on it on purpose. I think that you can pay attention to multiple senses at the one time. If you are paying attention to all of your senses, you are focusing in a broad way. If you are paying attention to one or two senses, you are attending in a focused way". He continues "It was surprisingly difficult to try and be aware of everything I was experiencing at one point in time. I could focus on a few things that I was experiencing at once, but as I added more, it became quite difficult".*

## **Section two**

Concerning sensitivity in different skills, he says *"Another example of this would be a tennis player who would need to focus on the ball, the racquet and on where he/she was going to hit the ball."* His next entry relates to page 16 of section 2 of the training papers on the Selection of elements, which he tried in practice and says *"I found that I played with a better tone when I paid attention to techniques and broke my focus up into the areas described in the training papers"*. He tries to make up a script but only includes 4 elements and it is very brief and similar to the example provided. *"1. Press the bow on the string, 2. Take a moment to think about what needs special attention in the piece 3. Think about the initial dynamic 4. Commence playing"*.

## **Section three**

His next journal entries deal with the physical cues to experiencing imagery section: *"I feel it easiest to imagine when I'm looking straight ahead"*. Concerning the fingerboard and left hand movements, he comments: *"I found the information in the training papers very helpful. There was nothing to add"*. Regarding learning to

develop scripts he says : *“Left Hand Attention Script – You should imagine putting your left hand onto the fingerboard. Imagine playing through a piece of music. At what point in the music are the shifts? When should you move your hand for each shift? How far is the shift? Intonation Attention Script – You should imagine playing a piece of music. Where exactly must your fingers be for the start of the music? Where exactly do they need to be when you shift? What is the distance between each shift? And finally Mental Practice Script - Can you imagine exactly where your left hand goes? Where is your thumb in relation to your fingers? What shape should your fingers be? Can you imagine how your right hand holds the bow? Can you imagine where your fingers go on the bow?”*

Unfortunately Student B had only quickly read the training papers at the time of the post training video interview. The Practicing material represented only minimal exposure to the training and has therefore been omitted. Student B answered the post training questions again in a phone interview after submitting his journal entries by email.

### **Post-training interview**

#### **What the student thought about the training.**

Student B responds that the training was good without being very specific. It was helpful about concentration – he says that he learned how to focus on various abilities and will certainly apply the ideas. He found the first section a bit abstract but the rest good. He didn't really have any difficulty applying the training to practice.



### **Attitude to Practice**

He says that the training has not affected the reason he practices. The training may help him enjoy practice more, just by being more efficient. He thinks the ideas presented will help him but is not specific. He says it has helped him understand more about practicing without the instrument and “that sort of thing”. He says he could improve the way he practices by using what was in the training papers and focussing on some of the different abilities. When asked how important he thinks it is that he pays attention to his practice, he answers “very important”.

### **How the student approaches their practice.**

He does feel that he knows how to practice. The training papers have given him a better idea about learning a new piece by breaking it up into sections, practicing it more slowly and going back over mistakes. He says that initially the music should be played at whatever speed is comfortable. He does think more about how he practices since the training but declines to elaborate. When pressed for what he thinks about he says “*just focusing on the various areas*”. He says that he would like to do more practicing in his head.

### **Mental Imagery Section Students understanding of attention**

He now has a better understanding of what it means to imagine music in his head. He has thought more about how he imagines and using it in practice, although it does not translate into ability yet. He does not think his ability to imagine intentionally has improved at all but he is more realistic about it. He agrees that it is very important to

know how to pay attention. He considers himself “*pretty good*” at paying attention and that it requires a fair bit of attention to learn something new. He says he now notices gaps some of the time when he has not been attending.

## **Student C – Response Summary**

### **Pre-training interview**

#### **Practice situation prior to the training**

Student C usually practices for about an hour around four to five times a week - usually in the evening, before or after dinner. She tends to be distracted by other concerns (like schoolwork) or interests. If she breaks her practice, it tends to be longer than intended. She usually practices in the kitchen or the music room at home, often while other things are going on elsewhere inside, such as her dad bashing on the pots and pans or another music lesson occurring. She explains that no one makes her practice, but during the holidays sometimes her mum or sisters will nag her to.

#### **Student's attitude to practice prior to the training**

Student C thinks the purpose of practice is to improve. She does not always find it easy to motivate herself, but usually enjoys it once she gets started. She went through a stage of hating practice, but now enjoys it, preferring it to television. She enjoys practicing both scales and pieces, but finds practice boring if she is in a bad mood, does not have her sheet music, would rather be doing something else or has nothing specific to practice. Her lack of ability at sight-reading annoys her sometimes because she does not feel she is playing the music properly. She improves quickly and notices this progress in lessons. She feels she is not good at practicing, lacking a proper routine. She thinks she could concentrate more.

### **Student's approach to practice prior to the training**

Student C does not feel she knows how to practice properly, no one has really told her how to or why, just how she should play scales or pieces. Usually, she plays pieces straight through, but if she makes a mistake, she will sometimes stop to correct it by replaying it slower and gradually speeding up. With pieces she tries to listen and get an idea of how they go in her head. When she is learning a piece she will get her mother to demonstrate by playing it slowly on the piano. First, she works through the music in sections. When she knows a piece, sometimes her mind wanders off. She agrees that this does not help her playing. She usually follows a routine of about ten minutes of scales then a study and then pieces, but sometimes she will spend a whole session on scales or a piece. She explains that she has a really bad concentration problem – she will just look out the window and keep playing. She is learning to look at the music now and figure it out for herself; previously she just listened to it. When she has problems she tends to get frustrated and asks for help.

### **Students understanding of mental imagery and attention prior to the training.**

Student C thinks she understands what it means to imagine music in her head. She considers herself good at seeing pictures in her mind, but they appear vague. When asked whether she can imagine drawing her bow she initially answers “no”, then changes to “yes”. She does not think she can imagine the physical feeling of playing a down-bow. Concerning paying attention, she defines it as “to concentrate”. She agrees that it is important to know how to pay attention, but does not think she is good at it. She could improve by resisting the urge to look out the windows or by focusing on

something. She says the researcher told her how to pay attention when he was her teacher and can remember some of that. She does not think it requires a lot of attention to learn something new because she likes doing new things.

### **The pre-training practice session**

Student C begins this practice session with scales. She has some intonation difficulties on the high notes of the 3 octave scales and repeats some of these several times to correct this. She has some problems with her descending shifts. After a while she changes to arpeggios. Again she has trouble with the descending shifts, but, after several attempts, they improve. She plays through her scales in a somewhat cursorily attention-wise. She continues but again her tempo fluctuates according to her difficulty with the music. She muddles through some sections when uncertain of notes. She has occasional short breaks for several seconds. Her overall strategy seems to be to play the music through and to stop and correct errors as she proceeds. She plays the piece more accurately with better intonation especially working to correct intonation on the double stops.

### **The training**

#### **Section one**

Student C starts her journal entries with comments on some of the awareness exercises in the first section of the training papers. She describes how she gradually became aware of different things in her environment. After listing some of her experiences she continues: *“...it sounds stupid. It’s so much different than how I*

*actually pay attention. I didn't think that this was what paying attention was about."*

The next journal entry records a somewhat distracted attitude concerning practice.

When asked, "When do you think the timing of the way you pay attention becomes important?" she replies, "*The timing happens when you think or feel you enjoy something or are starting to enjoy something.*"

She addresses 'the senses' from page 4 of the training papers describing some of the things she notices. Later, looking at the section on page 8 that deals with focus and width of attention she states:

"When am I in a broad kind of attention? I guess when I am playing my violin. I know what's going on around me. I think it would be better if I tried the focussed kind of attention. I have tried when I was practising what it felt like to pull my bow down and how I place my fingers on the string. Something unusual. I mean I have touched my violin so many times and not realised how this felt. When I am in a focussed kind of attention it's usually in school when I am doing my work. I am catching myself being focussed when I practise, I'm trying to pay more attention on what I'm doing, and what I am doing wrong and I am trying to see if I can fix it up on my own instead of asking for help".

In her response to the question concerning simultaneously experiencing different things (page 10) she says:

"I am hearing and seeing at exactly the same time, I am reading this paper and listening to the dishwasher, my eyes whilst writing can kind of see around me ie: the fridge, the stove the oven. Does anyone else see things around them? I think what happens is you are not fully focussed, no actually it's hard to comment on this one, because I am focussing at what I am playing but when just say a dog barks I am distracted but I have not lost focus on what I am playing."

Student C identifies all the animals in the first set and the pictures of the people but she cannot see the old man as such. She says “*can’t tell if it’s a man or a lady just a mouse or some strange frog*”. In her next entry she continues to consider how she experiences things:

“Well, not exactly the same, similar, but the nose thing on page 16. I don’t look at a person and go oh that person has a nose, it must be Amanda. I don’t even think I pay attention to it. This book makes me realise or think, I’m not sure that I actually don’t pay attention to things. That’s bad isn’t it? That’s up to you to decide! Ok, I’ll make a promise the next time I look at a person, I’ll see if it brings me more aware of my attention levels if that’s what you call them. I’ll tell / write what happens. As for the ink on the page with the note – I suppose. Actually yes, just re-reading what it says you hear a sound you recognise it as the sound of birds tweeting against a background of other noises, which is true. But seeing dots and lines (music) isn’t what I see – yes I do connect them as music – I don’t mean I connect the dots, I mean I look at them as music and read it. (well try at least).”

Her next entries deal with her response to the exercises in attending to the objects in different ways:

“Experiencing this is hard. Wow!, I was turning the paper round the black of course was easy to see although when you get to the white parts, I guess it’s just hard to adjust. Like when you look at the two faces it’s easy to make out what it is, but when you look at the white, you are distracted by the black, if that makes sense. Sorry, I have to write this but when I was reading that phrase in the box on page 19 I’m stunned, seriously and honestly, I’m not over it yet. I didn’t even see the other “the”. Wow! Another Wow !\_ oohh the lady thing on page 23. It took about 10 mins for me to actually see the young woman. Even when I read the instructions, just after my eyes like blinked. I was a sudden blink and then I was stunned. I might go and see what it feels like bowing, moving into a shift, putting my fingers down”

Three days later she continues the journal looking at the Reflections tasks. She comments:

I tried the shifting thing, and what it feels like to bow and put my fingers down. I was really impressed with shifting. Feeling it has made me shift better. Really and honestly. Although I am more aware of focusing. I think I have just been trying really hard to concentrate, it's kind of stuck there, this little voice saying 'concentrate, concentrate' gets a little annoying because it does distract me".

She then lists different things in her external attention environment, though she did not understand these questions or read them properly. In response to which senses she thinks tell her about playing she says: *"The senses that tell me about how I am playing is my ears. That's about all. Sometimes my eyes."*

She makes some comments about her thinking concerning awareness *"Being aware is almost like. I can't describe it. Like you know what's happening when I know I'm aware. I feel proud of myself. I have never thought about it. I guess it's an urge of concentration"* and later she writes *"OK. I'm in my awareness. I'll be in my awareness. I am actually aware at the moment. Although as I write, the TV is distracting me."* And later again:

"One moment my eyes will look at my niece as I am babysitting her. I'm watching to make sure she's not doing anything bad. But the next moment I'll be focused. I'd like to try when I practise to try not think of anything else besides my music. I want to try and concentrate fully for once. I'll write what happens tomorrow".



Later on she writes:

I am not aware of every single thing that happens, as I go into a concentration mode. So if I'm practising and I'm really concentrating on how that note sounds, and my mum calls me, sometimes I won't hear her until she opens the door and goes "Student C, such and such.."

The next section deals with her experiencing different kinds of information:

“ No, I never realised the kinds of information I was attending to while I was aware of things. Yes. I can imagine a brown box with wrapping paper and a red string. It's a sight thought. It wasn't very hard. I realised. I thought it would be hard but it was easy. Mmmmm... A fresh baked cake. I suppose I can imagine all these type of thoughts. Yes. I have thought in smells before. In school, for example, the teacher said can you imagine the smell of pancakes. So, Yes. I am thinking about word thoughts. I don't really know what you mean by that. Being you see a word in your head, or looking at something and automatically thinking paintbrush, box, muesli bar, mug.

Her other entries for this section deal with how she experiences attention and she comments:

“No. It can change and stay on one thing. It depends on what I am doing. Yes. It is from a large number of different things. I did this today when answering the question. No. It does seem like I am controlling my awareness. Yes, I can experience all the things at the one moment. I am able to attend on 7 things at once before losing concentration. A big rush – going faster. It's very fast.

## Section two

She starts her journal entries relating to section 2 of the training papers with a response to how she feels when she is fascinated “*When I'm fascinated. It feels like an engagement of a turn of mode. Like I'm so tuned into what's happening I won't hear what anyone else is saying to me*”. In rating her interest she says “*OK. The task I need to do is practise. As I have my second term performance I am eager to get a good mark, so I am rating it 8*”. And in response to how she could experience a 10 she says “*I guess what could cause a ten is if Mirabuy of 'Big Brother' was there or if someone like that*” and she then adds “*Yes. I do feel much more interested. Much more. I think I'll imagine it*”. In response to the question on examples of sensitivity in different skills she says “*Yep. We can distinguish between a variety of different tones - what sounds right and sounds wrong*”. Her next journal entry relates how she experiences pain when she practices in her back and fingers. She then goes on with her next entry that talks about the ideas on page 17:

“As I tried one way I was noticing on my right arm, which made my left hand playing not so good. Never mind, as I concentrated I felt I was exaggerating my playing, and my wrist was clicking, one click after another. Then I realised about what the book said 'Make it as easy as possible for yourself' or something like that. So I loosened EVERYTHING - my shoulders just fell down. I became a little slouched but I felt more comfortable. As I started playing (and I was very calm) it felt like my bow arm was doing everything for me. This caused me to drift off into daydream but I came to my senses and brought my awareness to me. Sounds silly.”

She created a concise practice script. This is the extent of Student C's Journal Entries.

She made no entries for the last section and apologised saying she did not have time.

## Post training Interview

### What the student thought about the training.

Student C thought the most interesting parts of the training papers were the ones that involved tricking the brain. She was really stunned by this and she could not see the double “the” for about ten minutes. Other parts she found interesting were the ones that referred her to feeling the muscles in her arm. When asked about what kinds of things she learnt she was initially uncertain, then says *when I begin my practice, to feel everything, how the way I hold my violin and how it feels to put my fingers down on the fingerboard and how it feels to bow. How I stand, and just look at how I practice my violin.* She agrees that it taught her to feel before doing. She had not realised how much was going on around her. She is then asked whether her thinking had changed. She answered affirmatively, just concerning practice she now wants to as she feels she knows how. *Like, without all the distractions, because I do get really distracted with all the violins in the background and everything. So I just go into a room by myself and go practice and even if there are pots banging in the kitchen I just don't hear them, like I will hear them, but I just don't tune into them. Like before I would get distracted and open the door and say “could you please stop banging” but I just keep playing again.* When asked if she can create a zone in which she can actually work and she responds “yep”.

Student C says that she would like to keep practicing the way she has learned from the training papers. If she had written the training papers she probably would have put in more diagrams, because they get your attention a bit more and they really fun. She would just sit there and be looking at them and show my family. She says she did experience some difficulties with the training but she has recorded those in her journal (see journal section above)

### **Student's attitude to practice**

Student C thinks the training has changed the reason she practices: *before I would go in and practice and it would be boring but now it's different I actually do want to practice and it's not boring*. She feels more in control of the process: “*you achieve something, it's not just repetition*”. She thinks the training will help her enjoy, think about and approach her practice. It has helped her understand the ways she could practice – it is now something she can get something out of. Student C thinks it is very important to pay attention when practicing, if you don't pay attention, “: *you just go in there and you can't learn anything from it*”.

### **How the student approaches their practice.**

Student C says that she does feel that she knows how to practice. She relates how she looked at a completely new piece and, within about an hour, she had learned it and it was not that hard. She started off and got the notes stuck in her head and then put in the bowing. She practices a new skill by taking it into slow mode and breaking it into parts – *if its really hard I will leave it and clear my mind and do something else and then go back to it*. Her response to mistakes is to just go over it again, go back and

start over. She thinks you need to have played a piece a lot of times before you can say that you know it. When asked if she thinks more about how she practices since the training she *“Yes, like even in my violin lesson, I will refer back to the training papers and think, no I am not going to do it this way, I will do it that way. Like I used to just rush through my scales. And now I will pay more attention to the tone I am producing and it does improve my playing. Before when I did my practice everything would hurt, but now since I have read the training papers my arm seems to move better”*. She confirms that she is paying more attention to the sensation. While practicing she thinks about trying to play it differently and make a decision about which sounds better. She also asks herself whether she is playing it correctly and if not she will repeat it. When she is asked whether she can practice in her head without her instrument she confirms that she can imagine the page open before her, holding the violin, playing and hearing the sound.

### **Mental imagery and attention**

She thinks she understands what it means to be able to imagine music in her head. Since the training papers she will think about imagery connected with practice, like the sound of the pieces, and the actions involved like her left hand fingers going down on the finger board. She feels she has a better understanding about how to use her imagination when she practices and has not experienced any difficulties in learning to imagine at this stage. Student C responds positively when asked if she has a better idea about what it means to pay attention. She agrees that it is important to know how to pay attention. When asked if she thinks she is good at paying attention She says reservedly *“I’m better”* and qualifies it *“I wouldn’t say I am good at paying attention,*

*I would say I am BETTER at paying attention”. She does not think it requires a lot of attention to learn to do something new if you put your mind to it. She now notices gaps when she has not been attending – and I’ll go back to it and think I can’t even remember playing it. But then I will go back and fix it up.*

### **Post training practice session**

She again starts the session with scales after tuning up, again experiencing problems with the descending shift which she stops to practice – she isolates the shift well and does some good practice repeating it several times correctly before going on. She then continues with arpeggios played slowly. She works through the shifts in the scale a lot more thoroughly slowly. This work seems a lot more accurate in terms of pitch and movement. She continues with scales and after another effective ascending shift she stops to change books. She then practices some exercises involving shifting to the third position and playing around with the tetrachords in that position. The next exercises involves finding third position from half position. She completes these exercises and begins practicing the sections of a piece. At first, slowly, then attempting it faster. She then plays the piece. There are some subtle things that she could improve that she isn’t noticing like the relationship between her head and neck. She tends to drop her head in slightly on the change to the down-bow. Some of her bows are a little jerky and could be smoother.

## **ENDNOTES:**

### **Chapter 1. Introduction**

1. When ‘string students’ or ‘string players’ is used in this dissertation refers to instrumentalists who play the orchestral stringed instruments – the violin, viola, ‘cello, and double bass.
2. Auer, L. (1921). p. ix.
3. Ellen Langer (1998) also refers to this idea in an interview when she says “ I think we can divide the body and the mind”.
4. Langer, E. (1998) p. 8 of 11 , p.11 paragraph 3. Matthay, T. (1934). “Thoughtless Practice” in Mackinnon (1935) p. 1, sec. 2 also Mackinnon (1938) p. 18,

### **Chapter 2. Review of the Literature**

1. Matthay, T. (1934). p.10.
2. Matthay, T. (1934). p.11, paragraph 3.
3. Mackinnon, L. (1935) p. 1, sec. 2 on “Thoughtless Practice” and also Mackinnon, L. (1938) p. 18 .
4. Mackinnon, L. (1935). p. 3,
5. Mackinnon, L. (1938). Ch. 5 and 6.
6. Thistleton, F. (1924) Ch. 24 p. 210 ff.

7. Robjohns, S. (1930). Ch.14, p.105.

8 Robjohns, S. (1930). Ch. 4, p. 25.

9. In this regard see Moray, N. (1987).

10 Nelson, S. (1972). Ch. 10. p. 210, Para. 2.

11 Nelson, S. (1972). Ch. 10. p. 226.

12. Nelson, S. (1972). Ch. 10. p. 232.

13. Piaget J. (1936).

14. Baars, B. (1988) on p. 61 sec. 1.4.5.

15. Baars, B. (1988) p. 74 sec 2.0

16. In this regard, see also Alport (1980).

17. Baars, B. (1988) on p. 51. sec 1.4.4

18. Baars, B. (1988) p. 137 ff. Chapter 4 deals with this phenomenon.

19. Baars, B. (1997) p. 60 and in this regard see also Langer, E. (1989). p. 36, ref. 11.

20. Baars, B. (1988) p. 305.

21. Baars, B. (1988) p. 65.



22. In this regard see Baars, B. (1988) p. 167.

23. Baars, B. (1988) p. 73.

24. In this regard Baars, B. (1997) p. 178 also Hallam, S. (1998) Ch. 7, p. 148. in the paragraph on “strategies for memorising music” .

25. Miller, P. (1985) pp. 181-221. and Miller, P. & Bigi, L. (1979) pp. 233-250.

26. The reader is referred to the section on localisation on page 17 in section 2 of the training papers.

### **Chapter 3. Methodology**

1. Willig, C. (2001). p. 74.

2. Willig, C. (2001). p. 22.

3. Willig, C. (2001). p. 27.

4. Willig, C. (2001). p. 142.

5. Smith, J. (1995), Smith, J. (1996) and Smith, J. et al. (1999).

6. Willig, C. (2001) Ch. 9. p. 142.

7. In this regard Smith J. (1996) p. 264. refers to Conrad (1987).

8. Willig, C. (2001). p. 17.

9. Merriam, S. (1988) p. 186.

## **Chapter 4. The Training Papers**

1. Langer, E. (1997). pp. 43-44.
2. Hunt, M. (1982) p. 357.
3. Stevens, J. (1971) pp. 5-58.
4. James, W. (1899) p. 94.
5. Bandler, R. & Grindler, J. (1979) and Bandler, R. (1985).
6. Zoff, O. (1951) p.116.
7. Stevens, J. *ibid.* and Green and Gallwey (1986) pp. 203-205. Exercises in Awareness.
8. Cooper, L. (1945) pp. 55-61.

## **Chapter 8. Conclusions**

1. Conable, B. & Conable, W. (1998). p. 132.

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